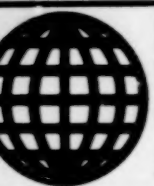


RS-UEA-88-015  
MAY 1988



**FOREIGN  
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# ***JPRS Report***

# **Soviet Union**

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***Economic Affairs***

# Soviet Union

## Economic Affairs

JPRS-UEA-88-015

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5 MAY 1988

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## ECONOMIC POLICY, ORGANIZATION, MANAGEMENT

### Model Regulations on Material Stimulation Fund Published

18200095a Moscow *EKONOMICHESKAYA GAZETA*  
in Russian No 7, Feb 88 p 23

[Text] We are continuing our publication of methodological materials concerning complete cost accounting and self-financing (see *EKONOMICHESKAYA GAZETA* Nos 50 and 52 for 1987 and Nos 4 and 6 for 1988). In this issue we are publishing the "Standard Provisions Concerning Policy for Formation and Utilization in 1988-1990 of the Material Incentive Funds of Enterprises, Associations and Organizations That Have Been Changed Over to Complete Cost Accounting and Self-Financing" (in the text of the provisions they are called "enterprises"), which have been approved by the Commission for Improving Management, Planning and the Economic Mechanism.

It was developed on the basis of the USSR Law on the State Enterprise and envisions the policy for the formation and utilization of this fund for enterprises that are applying the form of cost accounting that is based on normative distribution of profit.

#### 1. Policy for Calculating Stable Normatives for Formation of Material Incentive Fund

1. The material incentive fund of enterprises is formed according to stable normatives from the profit remaining at their disposal, which is a fund-forming indicator.

In order to calculate the normatives for the formation of the material incentive fund under the conditions of the changeover to complete cost-accounting and self-financing one first determines the amount of money deposited in this fund in keeping with the calculations of the five-year plan.

For these purposes the material incentive fund, established in the calculations of the five-year plan for 1988-1990 (for the various years), is increased by the sum of bonus funds whose source of formation is profit and production costs.

The list of funds included in the material incentive fund for calculating the normatives is given in Appendix 1 of the present Standard Provisions.

2. The amounts of the normatives for the formation of the material incentive fund for planned-profitable enterprises are determined by dividing the funds calculated according to Point 1 of the present Standard Provisions by the sum of profit remaining at the disposal of the enterprises for 1988-1990 (for the various years).<sup>1</sup>

In order to provide for stability the conditions for the operation of planned-profitable enterprises, the normatives of deductions into the material incentive funds from profit left at their disposal are calculated in keeping with the present point and averaged for the various years of the five-year plan.

An example of the calculation of the averaged normative deductions into the material incentive fund is given in Appendix 2 to the Standard Provisions.

3. The fund-forming indicator for less profitable enterprises is the sum of profit and a progressively decreasing subsidy for enterprises that are planned to operate at a loss—the sum of savings from the reduction of losses and the progressive decreasing subsidy.

4. Normatives for the formation of the material incentive fund for less profitable enterprises and those that are planned to operate at a loss are determined by dividing the funds calculated according to Point 1 of the present standard provisions by the sum of profit and the progressively decreasing subsidy for 1988-1990 for less profitable enterprises and the sum of savings obtained from reducing losses calculated by a running total for up to 1988 and the progressively decreasing subsidy for 1988-1990—for enterprises that are planned to operate at a loss.

An example of the calculation of normatives for less profitable enterprises and enterprises that are planned to operate at a loss is given in Appendix No 3 to the present standard provisions.

5. Stable normatives for the formation of the material incentive funds of the enterprises are established by the ministries (departments) and state production associations with the agreement of the corresponding trade union committees.

When establishing the normatives it is necessary to provide for a correspondence between the amounts of the material incentive funds of the enterprises and the amounts of this fund for the ministry (department) or state production association as a whole (taking into account the reserve for this fund).

The ministry (department) or state production association can, with the agreement of the corresponding trade union committees, differentiate the normatives for the material incentive funds for individual enterprises.

6. For enterprises that have been changed over to complete cost accounting and self-financing before 1 January 1988 the amounts of the economic normatives established for 1988-1990 remain the same.



## II. The Policy for Forming the Material Incentive Fund

7. The material incentive fund is determined by the enterprise in the plan and in practice by multiplying the normative established in keeping with Point 5 of the present Standard Provisions by the amount of the fund-forming indicator calculated as a cumulative total from the beginning of the year.

The material incentive fund is determined according to established normatives each quarter.

For planned-profitable enterprises whose plan includes losses for individual quarters, the deductions into the material incentive fund are made in the planned profitable quarters on the basis of the planned annual sum of profit.

8. The amount of the material incentive fund calculated according to Point 7 of the present standard provisions can be increased with money from the reserve for the material incentive fund of the ministry (enterprise) or state production association in connection with an increase in the output of new, highly effective technical equipment and new kinds of consumer goods.

It is also envisioned for funds from this reserve to be used to create the material incentive fund at enterprises and facilities that are being put into operation for the first time. These funds are established taking into account the normative time periods for the assimilation of production capacities. The sums allotted for these purposes are envisioned in the plans individually.

Upon the expiration of the normative time period for assimilation of production capacities these funds are not allotted for incentives for workers engaged in the assimilation of the production capacities.

9. The material incentive fund is additionally increased (reduced) depending on the fulfillment of contractual commitments for deliveries.

When commitments for the delivery of products (work, services) are fulfilled by 100 percent the material incentive fund envisioned for the corresponding quarter in which commitments for deliveries have been met is increased by 15 percent with a cumulative total from the beginning of the year.

This increase in the material incentive fund is made from the financial reserve and the cost accounting income (not including the wage fund) before it is distributed according to normatives into the economic incentive fund or the centralized fund for the development of production, science and technology and reserves of the ministries (departments) and state production associations.

The sum by which the planned material incentive fund has been reduced under the policy envisioned in the present point is not restored in subsequent periods of the current year.

10. In case the enterprises violate the normative ratio set for the various years of the five-year plan between the increase in average earnings and the increase in labor productivity (or their difference, in the event of a reduction of the level of labor productivity as compared to the base year) in the plan (and in the report) calculated as a cumulative total from the beginning of the five-year plan, the corresponding part of the material incentive fund formed according to the normative is reserved for use upon the achievement of the normative ratio or is transferred into the fund for social development for financing capital investments.

11. In cases where the distribution of the additional profit obtained as a result of incentive increments to wholesale prices for new, highly effective products, whose parameters correspond to the best domestic and foreign models, and for products with the state Emblem of Quality, according to the general policy for established normatives should lead to a significant reduction of bonus payments to workers of enterprises, part of this profit which remains at the disposal of the enterprises can, as an exception, by decision of the labor collective, be distributed among the economic incentive funds not according to the established normatives but in such a way as not to allow the aforementioned reduction of bonus payments.<sup>2</sup>

12. At the end of a year one can transfer to the material incentive fund money in the amount of the unutilized savings on the wage fund obtained as compared to the established normative under the condition that the enterprise fulfills the established plan for increasing labor productivity. Then these funds are transferred from the actual profit obtained in excess of the sums envisioned by the enterprise before it is distributed according to established normatives.

## III. Policy for Utilizing Material Incentive Fund

13. Money from the material incentive fund is expended according to the estimate. The draft of the estimate for the expenditure of this fund is brought up for discussion of the labor collective of the enterprise, and after it is approved it is established by joint decision of the administration, the Council of the Labor Collective and the Trade Union Committee and it is appended to the collective agreement. The administration and the trade union committee inform the labor collective about the utilization of this estimate.

When drawing up the estimate the funds for payment of bonuses and remunerations are envisioned taking into account the established normative ratios between the increase in the average earnings and the increase in labor productivity as a cumulative total from the beginning of the five-year plan.

14. The material incentive fund is expended for paying bonuses, remunerations and other forms of incentives for labor and material assistance. This fund is also used to pay workers for regular vacations that correspond to the earnings paid from the material incentive fund and the rayon coefficients to bonuses deducted from this fund.

15. With the agreement of the labor collective enterprises can use money from the material incentive fund to pay wages when the actual wage fund exceeds the normative (planned).

16. In individual cases, with the agreement of the labor collective, during the year of the changeover to new wage conditions, part of the material incentive fund can be used for increasing wage rates and salaries. In subsequent years of the 12th Five-Year Plan these funds are envisioned in the estimate of expenditures from the material incentive fund through planned deductions into this fund.

Money intended for bonuses for delivery of products for export is transferred into the material incentive fund.

Unutilized residuals of the material incentive fund cannot be removed and are utilized in subsequent years under the general policy in keeping with the established estimate for its expenditure.

19. Ministries (departments) determine, with the agreement of the USSR Gosplan, the USSR Ministry of Finance, and the AUCCTU, the branch peculiarities of the application of the present Standard Provisions.

#### Appendix No 1

List of Funds Included in the Material Incentive Fund for Calculating the Normative for Its Formation

The material incentive fund, calculated according to fund-forming indicators as a cumulative total to 1985

The part of the consumer goods fund used for bonuses (35 percent) under the additional material incentive fund used for incentives for increasing production of consumer goods per ruble of wage fund

Bonuses for creation, assimilation and introduction of new technical equipment (minus funds transferred into the centralized fund of the ministry) and the release of technical achievements

Bonuses for saving on concrete kinds of material resources

Authors' remunerations for inventors and efficiency experts

Bonuses for contributing to invention and streamlining from the fund created in the association or enterprise

Bonuses for increasing the degree of compensation for reactive power in electric installations

Other kinds of bonuses reflecting the specific features of the operation of the associations and enterprises whose source of formation is profit and production cost

Fund of the enterprises (40 percent of the enterprise fund is transferred into the material incentive fund)

Note: In order to calculate the normative for the formation of the material incentive fund for the ministry (department) as a whole, one also takes into account:

The additional material incentive fund for the assimilation of new capacities

The ministry fund

#### Appendix No 2

Example of Calculation of Averaged Normative Deductions Into Material Incentive Fund and Also Profit Remaining at the Disposal of Enterprises (Residual Profit)

#### Example

	1988	1989	1990	Sum for 3 Years
Material incentive fund for five-year plan, thousands of rubles	200	210	230	640
Fund for social development for five-year plan, thousands of rubles	100	110	130	340
Fund for development of production, science and technology, thousands of rubles	200	300	400	900
Profit remaining at disposal of enterprise according to calculations for five-year plan, thousands of rubles	500	620	760	1880
Averaged normative for formation of material incentive fund, percentages (640 x 100:1880)	34.04	34.04	34.04	—
Averaged normative for formation of fund for social development, percentages (340 x 100:1880)	18.09	18.09	18.09	—

Example

	1988	1989	1990	Sum for 3 Years
Averaged normative for formation of fund for development of production, science and technology, percentages (900 x 100:1880)	47.87	47.87	47.87	—
Profit remaining at disposal of enterprises, calculated taking into account averaged normative for material incentive fund, thousands of rubles	587.6	616.8	675.6	1880
587.6=200x100:34.04				
616.8=210x100:34.04				
675.6=230x100:34.04				
Fund for social development calculated taking into account averaged normative, thousands of rubles	106.3	111.5	122.2	340
Fund for development of production, science and technology taking into account averaged normative, thousands of rubles	281.3	295.3	323.4	900

In order to average normatives and the residual profit one determines the total amount of each of the three economic incentive funds for 1988-1990. After this all three funds for the 3 years are totaled and this determines the sum of profit remaining at the disposal of the enterprises in 1988-1990.

In order to determine the averaged normatives of deductions from profit into the material incentive fund the total amount of this fund for 3 years is divided by the sum of profit remaining at the disposal of the enterprises for the same period.

On the basis of the sums of the material incentive fund envisioned in the five-year plan for these years and the averaged normatives of deductions into the material incentive fund calculated taking into account the money indicated in Appendix 1 to the present standard provisions one determines the sums of profit remaining at the disposal of the enterprises for 1988-1990 (with the breakdown for the individual years).

The fund for social development and the fund for the development of production, science and technology should be recalculated taking into account the averaged normatives and profit remaining at the disposal of the enterprises. Then, if the calculated sums of each of these funds end up to be less than envisioned for the corresponding years of the five-year plan, the difference is compensated for through bank credit.

The ministries (departments) can apply different methods for averaging the aforementioned normatives. Then the sum of the material incentive fund, the fund for social development, and the fund for the development of production, science and technology should correspond to their calculated amounts adopted in the five-year plan, and the sum of these funds for each subsequent year should be, as a rule, more than their sum in the preceding year.

Appendix No 3

Table—Sample Calculation of Normatives for Formation and Amounts of Material Incentive Fund for Enterprise Planned To Operate at a Loss

	Unit of Measurement	1988	1989	1990
Calculation of Normative for Formation of Material Incentive Fund				
Subsidy to cover planned losses and form economic incentive funds	Thousands of rubles	900	700	600
Savings from reducing planned losses	Thousands of rubles	—	300	400
Sum of subsidy and savings from reduction of planned losses	Thousands of rubles	1000	1000	1000
Calculated amount of economic incentive funds formed from profit for five-year plan for corresponding years—total	Thousands of rubles	400	500	600
Including calculated amount of material incentive fund	Thousands of rubles	100	105	110
Normative for formation of material incentive fund	Thousands of rubles	10	10.5	11
Calculation of Amount of Material Incentive (Actual)				
Actual savings from reducing planned losses	Thousands of rubles	—	330	330
Subsidy for covering losses and forming economic incentive fund	Thousands of rubles	1000	700	600



Table—Sample Calculation of Normatives for Formation and Amounts of Material Incentive Fund for Enterprise Planned To Operate at a Loss

	Unit of Measurement	1988	1989	1990
Sum of actual savings and subsidy	Thousands of rubles	1000	1050	950
Amount of material incentive fund	Thousands of rubles	100	110.25	104.5
$100 = (1000 \times 10): 100$				
$110.25 = (1050 \times 10.5): 100$				
$104.5 = (950 \times 11): 100$				

#### Footnotes

1. The amount of the planned profit of planned-profitable enterprises for the five-year plan for 1988-1990 is increased by the sum of bonus funds included in the material incentive fund whose source of formation is production cost.

2. This policy is in effect during 1988-1989.

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#### Misconceptions on Socialist Market, Contract Prices Addressed

18200096a Moscow *EKONOMICHESKAYA GAZETA*  
in Russian No 9, Feb 88 p 5

[Article by A. Deryabin, doctor of economic sciences, professor: "The Market Has Its Own Laws: Demand-Price-Supply"]

[Text] The changeover from mainly administrative to mainly economic methods of managing the development of the national economy is impossible without active utilization of commodity-monetary relations. But these relations are an abstract concept of political economics. Such as certain quite real physical phenomena can only be discovered according to the indications of instruments, so commodity-monetary relations can be seen only in the effect of prices, profit, wages, various payments, and credit. From the degree of the interconnected and interdependent influence on the economy and changes in movement one can also judge the activity of the utilization of commodity and monetary relations.

#### A Competitive Situation

Two most important circumstances characterize and distinguish the socialist market from the capitalist one. First, the socialist market is formed and functions while retaining and even strengthening centralized management of the economy. The priority of the national economic plan is also retained. Second, the socialist market is organized and managed in such a way that its functioning contributes to more effective and rapid achievement of current and strategic goals of the socio-economic development of the Soviet society.

Of course the socialist market has other special features as well. But they shall be discussed somewhat later.

Although we are speaking about the socialist market this is still a market with inherent laws and with a special organization among participants in market, that is, extremely active commodity-monetary relations. The organization of the market, especially the socialist market, its laws and relations are certainly not simple and congenial. They are, rather, strict or one might even say cruel. An incompetent participant in economic life, a layman or a dilettante will always be at a disadvantage here. In a word, there are no giveaways here.

The development of commodity-monetary relations, relations of the socialist market, is a highly serious business. It is absolutely incompatible with superficial and simplistic ideas. Unfortunately, recently one can see that these are precisely the kinds of ideas that are becoming more and more widespread. And in reality people are silent about or pay no attention to vitally important problems.

It is possible to point to a number of simplistic, naive or simply erroneous ideas. Thus one fairly frequently encounters the idea that the changeover to wholesale trade in means of production (raw materials, processed materials, fuel, machines and equipment) and the enterprises' acquisition of the right to free selection of business partners will eliminate the dictatorship of the producer. It will no longer be they but the consumers who will determine what products should be produced, how many and of what quality. For some reason many people think that with free choice of the supplier those that are operating poorly will be left without orders and this will all force them to work better.

Thus certain workers of the Minsk Automotive Plant assume that with the introduction of wholesale trade it will be able to refrain from purchasing diesel engines which now come from the Yaroslavl Engine Plant. Its diesels are obsolete and, moreover, they are not assembled in the very best way, and they do not satisfy modern demands either of the automotive plant or of the consumers of Minsk Motor Vehicles.



But this, unfortunately, will not happen for the simple reason that there is no enterprise which could immediately take over the manufacture of tens of thousands of diesel engines.

Let us imagine, however, that through some quite extraordinary means they managed within a short period of time to create the necessary capacities for producing diesel engines. They also managed to bring together a collective of many thousands of highly skilled workers, employees, and engineers. The enterprise has been created and offers diesel engines to the Minsk Automotive Plant. But what about the Yaroslav Engine Plant? It is reconstructed and reorganized and also within the "shortest possible" time period begins to produce even better engines. The new enterprise begins reconstruction and so forth. And so in an atmosphere of competition scientific and technical progress is constantly proceeding at high rates in diesel engine construction. But why only there? In automotive construction, entire production, and in metallurgy. In a word, everywhere.

#### The Possibilities of Contractual Prices

It would seem that all is well. One bad thing is that this kind of progress and this kind of competition must always have at least twice the amount of production capacities and, correspondingly, twice the number of workers. And if at the given moment all of this is not available then in order to create an atmosphere of competition it is necessary to cut back the production volume. It will be necessary to forget about indicators of labor productivity and the output-capital ratio.

But how do they get out of this situation in the capitalist market? Do they really have reserve production capacities and a reserve army of labor? This path is forbidden to us if only for the reason that in a socialist economy there objectively can be no market of labor force. In order for such a market to exist it is necessary to have unemployment in appreciable amounts. Certain Soviet economists, to be sure, have already begun to hint at the expediency of creating a certain amount of unemployment in our country. But to deny the primary and most important conquest of the workers—the right to work—is absolutely inadmissible.

It is another matter that the constitutional right to work with a simultaneous constitutional duty of each able-bodied person to engage in socially useful labor to the extent of his abilities must not be transformed into the right to work at a given enterprise or in a given organization or institution. The obligation of labor placement should lie not with the enterprise but with the state.

But let us return to the problems of the socialist market. It turns out that wholesale trade in means of production alone is not enough to create economic competition among the producers to meet the requirements of the consumers. This requires putting economic levers and

incentives to work, mainly prices. But here again one can encounter such simplistic ideas about the possibilities of price setting as the desire to solve the problem in a purely bureaucratic way.

Thus many people place great hopes in the expansion of the practice of contractual prices established by free agreement between the client and supplier according to the relationship between supply and demand.

All this looks wonderful on the abstract theoretical plane and in certain economic and mathematical calculations, but it is a long way away from real life.

For even at a bazaar where, undoubtedly, there is free price setting, somehow one cannot see the real results of the effect of this mechanism. The opposite takes place: prices increase but the demand does not increase.

Contractual or free price setting can encourage improvement of product quality and create conditions for more complete satisfaction of demands only with the existence of a number of prerequisites.

In the first place, it is necessary to have overall market balance. When the overall sum of all means of payment at the disposal of the enterprise exceeds the sum of value of goods at existing prices, it is impossible to have normal functioning of the market, as is true, incidentally, for any economic mechanism. Second, each enterprise requires not one but several potential suppliers of the necessary products. A single producer or supplier is always a monopolist who will begin to dictate both the price level and the product quality and the delivery conditions. Third, it is necessary for the producers to be able to change the volumes of production in keeping with the market demands. Fourth, it is necessary to rule out the possibility of having the producers of a certain product agree among themselves about the price level, production quotas, and delivery conditions.

Now, in the majority of cases, these conditions have not been met. And the most difficult thing is the lack of overall balance. In order to improve the economy it is extremely necessary to have a radical reform of price setting and a restructuring of the financial and credit systems. When conducting these it will obviously be necessary to recognize the fact that some of the income of enterprises and associations and also of the state budget and ministries is not actually covered by commodities, that is, the income is purely nominal. And it is clear that simply to increase prices will not eliminate this income. It will grow as the prices increase. Therefore with a simultaneous revision of the prices it is also necessary to reduce the mass of money in circulation. How does one achieve this?

### Against Monopolistic Tendencies

It will certainly not help to create duplicate enterprises in order not to allow a monopoly of the supplier. This would be too lengthy a business which would have unclear economic results. The best solution, in our opinion, would be to grant all enterprises without exception the right to enter the world market in order to acquire the necessary products. Of course it would be necessary to introduce import duties whose amounts could be strictly coordinated with the currency resources, in the first place, and the level of development of the corresponding branches of our national economy, in the second place. But even with extremely large customs duties this would still create conditions for competition.

The development of the socialist market must be accompanied by an expansion of the practice of establishing prices by agreement between the parties. But experience shows that the changeover to contractual prices leads to their increase. Methods of direct administrative regulation of prices are the least suitable of all for curbing the desire of producers to solve their problems through increasing prices. There is nothing more harmful and fatal for the functioning of the market than administrative dictatorship of prices. Such intervention can only strengthen those negative phenomena that are to be averted by the radical restructuring of the management of the economy.

The enterprise certainly does not want to increase the price because a higher price looks better than a lower one. The higher the price the greater the sum of profit, and this means the greater the sum of income for the workers at the enterprise, deductions into the incentive funds, the greater the possibility for constructing new residential buildings, and so forth. Yet increasing prices in and of itself does not lead to an immediate increase in the number of new machine tools or the quantity of construction materials. Consequently one must speak only about redistributing resources. One person's gain is another person's loss. Otherwise there will be an increase of the deficit which has become so tedious to everyone—there is money but there is nothing to buy.

But what must be done in order for the socialist market to begin to function normally? In the first place we must not try by increasing prices to "condone" inefficiency and backwardness in scientific and technical progress. Second, necessary and justified price increases must be compensated for by reducing prices for other goods. Third, it is necessary to put into effect the mechanism of price competition of producer enterprises. This should be discussed in more detail.

### For What Should Prices Be Reduced?

There is nothing standing in the way of introducing differentiated norms for deductions for profit or incomes of enterprises depending on the change in the

level of contractual or centrally established prices. They can increase deductions in such a way that when prices are increased the enterprise is left with less than it had before the increase. And, conversely, when prices are reduced the sum of profit remaining with the enterprise will increase. These norms can also be coordinated with the dynamics of expenditures, thus motivating the enterprises to reduce them. Now the enterprise that produces new products can, by agreement with the consumer, establish any price within the framework of the so-called limit price. But with this kind of price setting the one that produces the new products does not always receive sufficient incentive and the ones that lag behind are not penalized.

We should hardly try to force the partners to tie the price level to any formal indicators of the technical specifications of the item. Different parameters have meaning in each specific case. Let them agree to any price. But the incentives for the producer enterprises must be made dependent not on the expected conventional effect but on the actually real one. With the output of a new product there is a process of obsolescence of the ones that were previously produced. The more effective the new item, the greater this is. Therefore it is necessary for the producer to indicate the product whose price will be reduced as a result of the obsolescence. The greater the price reduction the greater the advantages the producer of the new product will receive. The first to assimilate the innovation will obtain the greatest advantage. And those who lag behind will also lose in their earnings.

Proposals of this kind can be repeated subsequently. Of course, they require substantiation. But a different purpose has been set here: to show that for the functioning of the socialist market it is necessary first of all to create certain conditions. And then it will produce the expected effect.

Napoleon once said: "It is important to engage in battle, and then it will be clear!" But he was making fun of his listeners. The great commander always had a plan of action that was largely thought out. That is why he had his way with his opponents. We too must have a plan of action and, if only in general outlines, a picture of what awaits us if various measures are taken.

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### Resolution Adopted on Use of Transfer Rubles in Wholesale Trade

18200096a Moscow *EKONOMICHESKAYA GAZETA*  
in Russian No 9, Feb 88 p 18

[Text] The USSR Council of Ministers adopted the decree "On the Organization of Wholesale Trade in Products for Production and Technical Purposes for Transfer Rubles."

The decree notes that the organization of wholesale trade in products for production and technical purposes for transfer rubles in the USSR is an important condition for expansion of mutually advantageous economic cooperation with the CEMA countries and for its increased effectiveness.

The all-union cost accounting foreign trade association Vneshpromtekhobmen of the USSR Gosplan adopted the suggestion of the USSR Gosplan concerning carrying wholesale trade in products for production and technical purposes for transfer rubles. Material resources for wholesale trade using transfer rubles should be formed from products that are imported from the CEMA countries and also certain products that are produced domestically.

The USSR Gosplan, the USSR Gosplan and the USSR State Committee for Computer Equipment and Information Science will envision annually, beginning in 1989, the allotment in balances in distribution plans a separate line—"to the USSR Gosplan (Vneshpromtekhobmen V/O) for wholesale trade for transfer rubles" resources for products for production and technical purposes imported from the CEMA countries. Under this same policy these departments will allot resources for products for production and technical purposes from domestic production according to the list they establish and in volumes that provide for complete commodity coverage of the funds in transfer rubles of the enterprises, associations, organizations, ministries and departments of the USSR, and the councils of ministers of the union republics. It points out the inadmissibility of having a shortage in the balance of the transfer rubles and the corresponding material resources at the disposal of enterprises, associations and organizations.

It is noted in the decree that enterprises, associations and organizations can sell through wholesale trade products for production and technical purposes that are produced in excess of the state order or commitments under economic agreements. Then the enterprise (association) that manufactures the product deposits the money in transfer rubles into the currency fund according to the normative established for the delivery of products for exports.

The USSR Gosplan must give priority to providing resources of products for production and technical purposes for wholesale trade allotted for export but not sold on the foreign market and returned to the national economy.

The foreign trade organizations of the ministries and departments of the USSR that purchase products for production and technical purposes in the CEMA countries in keeping with the established annual plans are instructed to turn them over to the USSR Gosplan for the organization of wholesale trade in volumes and according to a list in keeping with the balances and plans for distribution.

It has been established that the Vneshpromtekhobmen All-Union Cost Accounting Foreign Trade Organization performs intermediary functions in wholesale trade in products for production and technical purposes for transfer rubles. The association forms resources of products intended for such trade and provides for the sale of these products to the buyers.

A policy has been determined for concluding agreements for the purchase of imported products for production and technical purposes by the all-union cost accounting foreign trade association Vneshpromtekhobmen with Soviet foreign trade organizations. Wholesale trade in products for production and technical purposes for transfer rubles should be carried out at union and regional trade fairs organized by the USSR Gosplan.

The USSR Gosplan has been instructed to determine the time intervals, time periods and place for conducting the trade fairs and to solve other problems related to organizing and conducting the trade fairs, concluding contracts and coordinating specifications.

It is recommended that the all-union cost accounting foreign trade association Vneshpromtekhobmen organize a permanent exhibit of models and catalogues of products for production and technical purposes offered for wholesale trade and that it utilize specialized exhibitions conducted by the foreign trade organizations of the CEMA country on the territory of the USSR and also specialized trade fairs conducted by territorial agencies of the USSR Gosplan.

The all-union cost accounting foreign trade organization Vneshpromtekhobmen through wholesale trade sells products for production and technical purposes to the consumers at contractual prices. The policy for establishing and applying contractual prices in transfer rubles is determined by the USSR Gosplan with the agreement of the USSR State Committee for Prices on the USSR Ministry of Finance. The contractual price in transfer rubles is translated into Soviet rubles according to a policy applied when importing goods. With wholesale trade in products for production and technical purposes for transfer rubles the all-union cost accounting foreign trade association Vneshpromtekhobmen receives an increment to the cost of this product in the contractual prices. The amount of the increment is established under the policy set by the USSR State Committee for Prices.

The USSR Vneshekonombank has been instructed to give the all-union cost accounting foreign trade association Vneshpromtekhobmen information about the availability of currency in transfer rubles in the accounts of enterprises, associations, organizations, ministries and departments of the USSR and the councils of ministers of the union republic. The USSR Vneshekonombank withdraws from the nonbalance account of the consumer, at his instruction, the sum of currency funds in transfer rubles determined by the contract between the



purchaser and the all-union cost accounting foreign association Vneshpromtekhobmen and informs the parties concluding the agreement about the withdrawals that have been made.

The USSR Vneshekonombank and the USSR Promstroybank have been instructed each month to establish with the agreement of the USSR Gosstat and the USSR Ministry of Finance the policy for extending credit and keeping accounts for products for production and technical purposes sold through wholesale trade for transfer rubles.

The sale through wholesale trade for transfer rubles of medical equipment, cultural-domestic, sports and other goods is carried out by the USSR Ministry of Public Health, the USSR Ministry of Trade and the USSR State Committee for Physical Culture and Sports.

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#### Discussion of Domestic Need for CEMA Ruble Convertibility

18200096c Moscow *EKONOMICHESKAYA GAZETA* in Russian No 9, Feb 88 p 20

[Article by G. Rybalko, candidate of economic sciences: "Convertibility of the Ruble on the Agenda"]

[Text] The Basic Provisions for Radical Restructuring of the Management of the Economy approved by the June (1987) Plenum of the CPSU Central Committee emphasized that special attention should be devoted to stage-by-stage provisions for convertibility of the ruble, first and foremost within the framework of the CEMA. What is the economic essence of this statement of the problem?

Convertibility, or the ability to circulate, of national currency means a guaranteed possibility of exchanging it for foreign currency and using it in various international accounts. With complete or free convertibility it extends to practically all holders of currency, national or foreign, and also to any currency operations—commercial or noncommercial, current or investment.

In international practice there are various forms of limited convertibility with which various kinds of currency restrictions are retained, for example, in investment operations. The widespread form of limited convertibility of national currency is the so-called foreign currency exchangeability which can be used only by foreigners who do not reside in the country.

Under the conditions of the capitalist economy the convertibility of national currency through the relatively elastic tie that is maintained between the domestic market and the world market contributes to a certain degree to strengthening the country's foreign economic positions. Additional possibilities and conditions are created for more effective inclusion in international division of labor, the achievement and maintenance of

relatively high quality and the leading technical level of export products, and trade and currency accounts on a multilateral basis. At the same time there is also a greater threat of unfavorable foreign influence on the national economy, above all in connection with sharp fluctuations of world prices, exchange rates, and percentage rates.

Usually converted currency is exchanged for other monetary units at a single exchange rate which fluctuates depending on the real relationship between supply and demand for it. When the national currency is not convertible or is closed its exchange for other units when carrying out export-import and other foreign economic operations is regulated by the corresponding laws and norms. There can be a multitude of exchange rates which do not always reflect the real economic situation.

The Soviet ruble and the national currencies of other socialist countries, as a rule, are not used in international accounts. The exception is mutual accounts among CEMA countries for certain payments on the basis of retail prices whereby, on the basis of a multilateral agreement, it is possible to have a limited exchange of national currencies one for the other and for transfer rubles. These countries keep all their other accounts among themselves in the socialist collective currency—transfer rubles, and with the majority of other countries—in convertible currencies of the Western states. In domestic accounts—for payments and revenues—the foreign currency is exchanged for national money on the basis of currency plans and also deductions from export earnings.

During the postwar period currency exchangeability was restored relatively rapidly (in 1958) by West European countries. Why has it not yet been extended to socialist countries?

#### Planned Management and Exchangeability

Many Soviet economists note above all the lack of the conditions necessary for the introduction of currency exchangeability: objective production difficulties, the shortage and inadequate quality of goods offered for sale on the foreign market, and certain currency difficulties.

Apparently a significant role has also been played by the general stagnation in our economy and finances during the 1970's and 1980's, and especially the underestimation during this period by theoreticians and practical workers of the possibilities of economic influence of financial levers on foreign economic ties.

A number of Western economists in general make judgments about the fundamental incompatibility of currency exchangeability and a planned economy.



Does currency exchangeability not really have a random basis that is incompatible with a planned basis and with the economic independence of the socialist countries and their community?

Socialist planned management, in our opinion, is certainly not contradicted by the development of all monetary functions of national currency, which also is served by the introduction of convertibility.

The task of gradually providing for exchangeability of the ruble is set not only for financial experts. It is not only and not so much they but, essentially, everyone on whom planned output of modern, high-quality products and effective functioning of the national economy depend who can provide the necessary general economic conditions for the achievement of this goal. This task is the constituent part of the comprehensive restructuring of the entire economic mechanism in which centralized management and planning will be effectively combined with the development of commodity and monetary relations and with a more consistent and flexible accounting for the requirements of the law of value. In turn, the weakening and removal of currency restrictions could contribute to increased maneuverability and effectiveness of foreign economic and all economic activity of enterprises and associations and to the development of direct production ties.

#### The First Steps

The task of theoretical substantiation of convertibility when developing concrete practical measures for improving the economic mechanism has risen to its full height today, especially in the area of price setting and currency-financial relations. The first steps are already being taken in this direction. Thus in an economically substantiated way the ratios of prices for various groups and kinds of products are to be brought closer to world prices, conditions are to be created for carrying out progressive changes in the structure of foreign trade, and international specialization and cooperation in production are to become deeper in order to change over to the utilization of currency exchange rates in the future.

It would seem that the organization in our country in 1989 of wholesale trade for transfer rubles, including in products imported from the CEMA countries, and also the utilization of their national currencies in certain accounts, which are envisioned by a recently adopted decree, will also contribute to this task.

Bringing domestic price proportions closer to world proportions will contribute to improving the system of internal price setting and providing for its anticost orientation. At the same time the exchange rate of the ruble will be considerably more realistic and it will correspond to the actual ratio of the purchasing ability of the currencies—not only the average for the overall totality of goods that are produced and exported, but also for the basic commodity groups. This, in turn, will

make it possible, as was envisioned in the aforementioned decree, to use exchange rates more extensively to improve foreign economic activity.

The natural sphere for priority introduction convertibility includes the deepening integrational economic ties among the CEMA countries. In his speech of the 43rd (Extraordinary) Meeting of the Session of the CEMA, the head of the Soviet delegation N. I. Ryzhkov noted that we support the agreement of the majority of the countries concerning the introduction of reciprocal exchangeability of national currencies and the transfer ruble for direct production ties, joint economic activity, and scientific and technical cooperation.

A more difficult problem is the possibility of introducing exchangeability of the ruble and other socialist currencies into freely convertible currencies. It is thought that in the CEMA countries the necessary economic conditions for this have not been created. In addition to differences in price proportions, significant obstacles to the introduction of this kind of exchangeability are the increased demand for many high-quality goods from Western firms, the shortage of converted currency for current payments, and the significant foreign indebtedness. In this connection the socialist countries still have to retain fairly rigid currency regulation and currency restrictions.

#### Possible Measures

Under current conditions when within the country the demand for convertible currency significantly exceeds the supply, in practice one could use exchange operations with the application of numerous currency rates whereby, for example, official agencies exchange national money for currency notes from the exporters at a preferential rate. It seems expedient to use various legal forms of currency exchange at a lower rate than the official market currency rate which reflects the current relationship between supply and demand. In particular, this can be done in the form of currency auctions at which official agencies or the exporters themselves can sell foreign currency to importers.

It was noted at the 43rd CEMA session that as a long-range goal one must have in mind a gradual changeover as the necessary conditions arise from mutual exchangeability of national currencies to the creation of a collective monetary unit which will subsequently be convertible into freely convertible currencies. This will require time and significant changes in the economic mechanisms and principles of economic interaction of the countries.

For a long time the CEMA countries have been using a system of mutual accounts in nonconvertible currencies. The utilization of a closed currency cannot but have a negative effect on the commodity and monetary relations and the development of the market of the CEMA countries since under these conditions it is practically

inevitable that they will reproduce the lower quality standards, price and currency distortions, and unsubstantiated interest rates. Having achieved the utilization of socialist convertible currency in the accounts of the CEMA countries it will be possible to strengthen their reciprocal ties even more. Then there will no longer be the currently existing incentive to sell better quality goods mainly for convertible currency to third countries since within the framework of the community these goods will be paid for in convertible currency.

Having this prospect in mind even at the present time it would be possible to take a certain concrete step—to introduce into the IBEC [International Bank for Economic Cooperation] special accounts in transfer rubles with conditions of their unlimited exchangeability into freely convertible currencies. Under modern conditions this convertible transfer ruble could be applied in those mutual accounts among socialist countries where, for a number of reasons, it is necessary to use the convertible currencies of the countries of the West and also in certain accounts with third countries.

It would be expedient to offset the money deposited into the special accounts in convertible transfer rubles with an equivalent deposit in freely convertible currency. The IBEC could use a certain amount of the stable residual of freely convertible currency used for these accounts as additional credit resources.

The introduction in the IBEC of special accounts in convertible transfer rubles in and of itself does not mean, naturally, any essential transformation of the existing system of accounts in transfer rubles. Nonetheless, this measure will be a practical step for improving the CEMA currency mechanism and will contribute to a certain expansion of the sphere of utilization of socialist collective currency and the strengthening of its international prestige.

From the Editorial Staff. An analysis of EG mail shows: With the direct entry of many Soviet enterprises into the world market and the development of new forms of economic cooperation—direct ties, production cooperation, joint enterprises—the problem of currency exchangeability has moved from the purely theoretical area onto the practical plane. In publishing this article, which contains debatable points, the editorial staff invites the readers to discuss the problems and economic conditions for introducing convertibility of the ruble and improving the CEMA currency-financial mechanism.

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## INVESTMENT, PRICES, BUDGET, FINANCE

### Use of Price, Other Reforms To Eliminate Unprofitability Discussed

18200105a Moscow *FINANSY SSSR* in Russian No 2,  
Feb 88 pp 16-22

[Article by V. A. Rayevskiy, division chief for Financing the Fuel and Energy Complex and Metallurgy of the USSR Ministry of Finance: "Financial and Economic Problems of Eliminating Losses in Branches of Material Production"]

[Text] The key principles for the formation of the modern model of the economic mechanism which contributes to the implementation of the tasks for socioeconomic development set forth by the 27th CPSU Congress are complete cost-accounting and self-financing. The realization of these principles in management practice is the only possible path to actually expanding the rights of associations and enterprises in economic activity and increasing their responsibility for the results of their work. We must not allow inconsistency in solving problems that determine the effectiveness of the influence of these principles and residual phenomena of administration in economic life to become, as has been the case in the recent past, an impediment to the development of initiative and social enterprisingness in efficient utilization of production resources.

The experience in economic innovations at the end of the 1960's and the 1970's confirms that formally reducing established indicators and including profit in them are not enough to overcome the inertia in economic thinking and the expenditure orientation of planning decisions.

At the June (1987) Plenum of the CPSU Central Committee they earmarked a range of tasks included in the radical reform being carried out in the economy. The USSR Law on the State Enterprise (Association) when into effect in 1988. It envisions the unshakable rights of enterprises in planning and economic activity and the economic, normative nature of their interrelations with higher organizations and financial and banking systems. This is the basis for the intercoordinated measures for eliminating the "mechanism of retardation" on a broad front.

Now it is important to reveal the factors that in one way or another have determined the inconsistent nature of measures conducted in the past and their poor results. Among the multitude of factors we shall single out two. First, the system of economic incentives and the possibilities of production and social development of associations and enterprises were severed from the actual source—profit. Economic incentive funds were determined depending on the technical and economic indicators, which, although they were linked to profit, were still at best only one of the factors in its formation. It was possible, for example, to achieve an increase in output of products per worker and obtain the right to additional deductions into the fund with a practical reduction of the source of deductions if, for example, items were produced at a loss. Second, no real practical steps were taken toward eliminating losses as a phenomenon that is intolerable for management based on economic methods.

The first attempts at introducing cost accounting in a socialist economy in their day also came up against the low level of effectiveness and the losses of state enterprises in individual branches of the national economy. V. I. Lenin sharply and unambiguously expressed his

attitude toward this economic phenomenon: "I think that trusts and enterprises on cost accounting are established precisely so that they themselves will be responsible and in all ways responsible for making sure that their enterprises do not operate at a loss. If when we create trusts and enterprises on cost accounting we are not able to provide for fully satisfying their interests through business, then we will be complete fools."<sup>1</sup>

This statement of Lenin's includes all the requirements we are placing on management today: responsibility for the results of the work, full initiative in solving all problems that determine increased results and, finally, uncompromisingness with respect to the intolerability of losses. Subsequently an underestimation of commodity and monetary relations in our country led to a reduction of the role and significance of value indicators in economic activity, to a deliberate separation of prices from socially necessary expenditures, and a gradual spreading of losses in practically all branches of material production.

One cannot say that the question of the need to eliminate losses has not been raised at all. There are quite a few oral and written "lessons" addressed to branch ministries concerning the existence of enterprises that operate at a loss and products that are produced at a loss. But planned legalization of losses has essentially determined the formal, ineffective nature of all these critical remarks.

The development of normatives for the formation of economic incentive funds in percentages of profit means that the profit becomes the main condition for the utilization of funds for production and social development and material incentives. Previously it was possible to fulfill fund-forming indicators and deduct funds, even when there was insufficient profit, through branch redistribution of profit. The new economic mechanism precludes such a possibility. Earned profit is the only channel and source for the formation of funds. This important but principal point of the new economic mechanism would seem to eliminate the first of the factors we mentioned concerning poor effectiveness of previous attempts to change over to economic methods of management. This would be true if its effect were irreversible. But in fact the scale of losses in the national economy is such that it is still unrealistic to place such proposals on the agenda. There was a time when enterprises that were planned to operate at a loss could make deductions into the fund only within the limits of the above-plan reduction of losses. But during past years the separation of indicators for the deduction of funds from the source of their formation and the situation with respect to the "earned nature" of funds have become so confused that it is not simple to straighten it out.

Losses are a sad reality of economic life. In individual branches the proportion of enterprises operating at a loss reaches more than 20 percent of the overall number. The general principal provision for fund forming is not

suitable for this significant group of enterprises. The earning of funds becomes a fiction. Economic methods are deprived of their financial basis.

What are losses? In the most customary definition, they are the difference between the sales price of the products and kinds of work and services, on the one hand, and expenditures of business, on the other, when the expenditures exceed the results. In this situation in order to settle accounts with suppliers and other contracting agencies and to pay wages to the workers the association or enterprise must obtain external support through intra-branch redistribution of profit or subsidies from centralized funds and reserves of higher organizations. But in order for the association or enterprise to develop normally and satisfy the needs of the national economy and population for products of its profile, it must expand its activity, carry out renewal, improve the production apparatus on a progressive technical basis, and so forth. And to do this it needs financial resources that are created by other labor collectives.

Consequently, unless losses are eliminated there is no self-supporting production, which is a fundamental principle of the organization of cost-accounting activity, and this means that it is impossible to change over to self-financing whereby all funds for production and social development and material incentives must be earned by each collective. At the same time only a changeover to self-financing and normative methods for forming monetary funds can overcome the dependency and the habit of raising money from the outside in order to support the activity of the association (enterprise). And yet according to the USSR Law on the State Enterprise, it should participate in the formation of the statewide fund of financial resources—of the USSR State Budget. Without this there can be no complete cost accounting. Therefore it is important not to allow an unjustified narrowing of the circle of phenomena that are subject to analysis and problems that are awaiting a solution. Otherwise there will be a restriction both of the front of economic work which must be conducted and the arsenal of means that should be used for this.

As we know, a considerable share of the losses are caused by the fact that prices for certain kinds of products do not reflect socially necessary expenditures on their production. In practical parlance, socially necessary expenditures frequently mean average branch production cost which reflects the existing level of technical supply, the utilization of production potential and the organization of labor. But what can one say about the "objective" basis for price setting if in many branches more than 40 percent of the fixed capital is worn out and the productivity of the new technical equipment that is introduced is only 8-10 percent higher than that of the old equipment, while it is much more expensive and the level of material-intensiveness of products exceeds that of foreign analogues by a factor of 1.5-2. The prices of products created under these conditions only preserve the existing level of management and do not contribute to



the elimination of losses. The net income in the branch reflected in these prices seems to be created but the national economic indicator of effectiveness and quality of work (relationship between net income and the value of fixed production capital and material circulating capital) is steadily deteriorating.

Data of the USSR State Committee for Statistics show that the profitability (relationship between all monetary accumulations and the value of fixed production capital and material circulating capital) decreased from 46.2 percent in 1960 to 16.9 percent in 1986. It is understandable that the reduction of profitability reflects the influence of two diverging vectors: the growth rates of net income (source of financial resources) and production capital (on whose increase a considerable part of these resources are used). Even with the undoubted increase in the absolute value of each point of increase in net income, this tendency reflects not only a reduction of the effectiveness of accumulation but also a growing strain on the balance of finances. Here it is necessary to recall that the net income is also used for increasing fixed capital in the nonproduction sphere where the needs for resources are constantly increasing because of the surmounting of the residual principle in allotting funds for its development.

An economically unjustified approach to price setting has led to the appearance and rapid growth of subsidies associated with the creation of so-called "cost-accounting conditions" for the production and sale of products. These include all kinds of differences in prices: procurement prices that are higher than calculated prices, wholesale prices that are higher than calculated prices (for raw material) and calculated prices that are higher than wholesale prices (for prepared products), wholesale prices that are higher than retail prices, and so forth. Many means have been invented to cover these differences: regulation accounting, budget allocations, financing from profit of the economic agency as ordinary expenditures are, and so forth. We have repeatedly had occasion to express our attitude toward price differences on the pages of the magazine.<sup>2</sup> The difference in prices creates serious impediments and distortions when planning and evaluating the indicators of the effectiveness and quality of work. But we consider this a lesser evil than direct subsidies, which take away the possibilities for the enterprises and associations to utilize the modern arsenal of economic methods of management. But there is no doubt that the difference in prices conceals to a quite significant degree the real amounts of losses in the national economy.

There are three kinds of losses: concealed losses, caused by the low technical level of production which are formally covered by the existing wholesale prices and rates; losses caused by the fact that state expenditures exceed the final sales price of the products, which makes it necessary to grant subsidies to cover losses and artificially create an apparently positive financial result; and losses that are reflected as a result of cost-accounting

activity. The last kind is like the "tip of the iceberg" compared to losses in the broad interpretation of this category as an indicator of a low level of effectiveness of the organization of production and labor in the branches of the national economy.

We have already mentioned one of the traditional areas for eliminating losses. This is a reform of wholesale prices and rates. After the reform of wholesale prices and rates (1982) the coal industry still did not become profitable. Since 1986 the economic results of the branch have been formed not in terms of prices for the sale of coal to the consumers but in terms of calculated prices subsidized from the budget which are not economically sensitive to the consumers. One can clearly trace a line of sharp reduction of profitability in the timber and petroleum industry and the extraction of ore. The largest number of enterprises operating at a loss are found in these branches.

The future reform should not only lead to a correspondence between wholesale prices for the products of the basic branches and socially necessary expenditures, but also create a "reserve of stability" for the future. A large share of products of the basic branches are included in the state order and are the basis for centrally planned consolidated balances of production and distribution of products. The stability of prices for these products provides a stable base for planning and estimating the value indicators of all other branches of the national economic complex. The reform that is being prepared will touch upon all kinds of prices (wholesale, procurement, calculated, retail), which will make it possible to eliminate the confused system of subsidies that distort the evaluation of one and the same products for the producer and for the consumer.

If with respect to prices for products of the basic branches there is the task of not allowing the previous mistake of underestimating the tendencies of growing production outlays, which led to a rapid return of the problem of their operating at a loss, with respect to prices of processing branches belonging to the basic consumers of material resources the task is somewhat different. Here the postulate of creating "cost-accounting conditions for all normally operating enterprises" in the past oriented them toward the expenditure nature of prices. The higher the material expenditures, the higher the price level as well. Hence the lack of correspondence between prices for new equipment and its productivity. As a result a situation arose wherein "prices give the consumers in distorted form the real economic proportions of the production of products, the effectiveness of material and labor resources."<sup>3</sup> This means that for products of these branches the orientation toward the basic production cost and the weak tendency toward reduction would be wrong.

In this connection one must not forget about the remark made by D. S. Molyakov, that technical equipment is progressive insofar as it is economically expedient, that



is, the only machine, technology or new kind of material that can be considered technically progressive is one whose application produces a savings on public labor or improvement of the conditions for it. Prices must become the normative that determines the economically expedient expenditure of resources on increasing the productivity or other indicator of the basic consumer property of the items. With the production and assimilation of new technical equipment it is possible that there will be losses (with a subsidy from centralized branch reserves) during the period of implementation of measures for bringing the technical equipment up to the competitive level of the integrated indicator of productivity and expenditures on production.

From all that has been said it follows that even after the revision of wholesale prices and rates losses will not completely be eliminated from economic life. They can still be recognized as a temporary circumstance for a given economic object which should be overcome within a short period of time. The main means to do this is planning although, possibly, this also sounds contradictory with respect to what has been said above. Up until recently planning of losses kept production conditions at a low level of organization. Now it will be necessary to turn this into a lever for eliminating losses from economic life.

The scale of losses is fairly impressive even without the expanded interpretation of this category. In industry more than 4,000 enterprises are operating at a loss and the sum of annual losses from these enterprises is about 4 billion rubles. And if one calculates according to the various kinds of products the sum of losses exceeds 6 billion rubles. If one adds to this the losses of construction—installation, supply-sales, and agricultural organizations, the sum of losses, like a heavy burden bearing down on the economy, almost doubles.

An analysis of fairly typical examples of the appearance of losses convinces us that they are largely the result of erroneous planning decisions. If one were to arrange in sequence a series of typical planning mistakes it would look like this: the planning decision with the deliberately exaggerated effect; an incorrect selection of the location of the object from the standpoint of provision of raw material, work force, and the transportation and energy situation; construction without taking into account the rational sequence of startup of individual productions, as a result of which disproportions arise in the technological chain and the total capacities are underutilized; the allotment of funds to cover planned losses instead of using them to unclog bottlenecks and eliminate the low technical level of production. To this one must add construction imperfections and mistakes and other factors of an organizational nature.

This situation is typical of practically all branches of the national economy. In the system of material and technical supply, for example, at one time they created the Kaluga enterprise for delivering metal products without

taking into account the real capabilities of the metal consumers in this economic region. In spite of the fact that the planned capacity had to be revised in the direction of reduction by 20 percent, it was underutilized by the same amount and had to be adjusted. Technical equipment intended for lifting, weighing and transporting large cargoes and equipment for processing metal products which is in short supply in other economic regions stand idle here. The turnover of capital has slowed down by 15 days. The enterprise loses more than 200,000 rubles a year.

And this is how a plant that is doing work necessary to the country begins to operate at a loss—capacities are expanded for producing metal in order to improve the utilization of local resources of scrap metal and reduce transportation expenditures involved in the supply of metal to remote regions of the country. Before 1986 the Amurstal Plant was operating profitably but after the new electric steel-smelting shop went into operation the entire plant became unprofitable and was planned to operate at a loss. The reason is that they took twice the expected amount of time to assimilate the planned capacities of the shop and there were cost overruns on almost all kinds of material and fuel-energy resources. All this was the result of an irresponsible attitude on the part of the client toward supervision of construction and the acceptance of the facility not only with design shortcomings but also with construction shortcomings. In order to eliminate these and repair the practically new equipment it was necessary to take away labor, material and financial resources that were needed by the other shops where all the time their own problems were piling up and complicating production.

In industry there are enterprises which for decades have been operating at a loss according to the plan. These include the majority of plants for producing construction brick. Not so long ago it was recognized that there is no future for brick. The branch received almost no money for reequipment and reconstruction. And although the plants were under dual jurisdiction of a union-republic ministry and local agencies, there was essentially no branch monitoring of the technical level of production or the product quality. The result of such activity is known: the majority of plants are operating at a loss to this day. The production cost of 1,000 bricks at the Ruzayev Plant is 79.6 rubles and at the Kansk Plant—135.2 rubles.

Over 5 years in order to cover losses of plants on the production of brick as much money was spent as would have been needed for a complete technical reequipment and reconstruction on a progressive basis of more than half of them. The time has passed and there are no longer any funds that could be used to bring the branch up to the modern level in order to improve its economy.

With the new economic mechanism there is a change in the policy for covering planned losses. An economic lever has been created for increasing the effectiveness of assignments for reducing losses. The main thing here is

to combine the funds intended for covering losses and planned expenditures of enterprise operating at a loss with other funds for financing measures for the development of production, science and technology into a unified fund. Progressively decreasing normatives for financing contribute to the assignment for eliminating losses that is envisioned in the plan. When we do not reach the planned rates of reduction of losses there is a need to look for additional resources. But if we manage to accelerate the conducting of measures for eliminating losses, the savings remains at the disposal of the agency of the branch administration and can be used for implementing measures for economic and social development of the branch.

Much is being done in this area in the USSR Ministry of the Petroleum Industry and the USSR Ministry of the Gas Industry where, in addition to losses of enterprises related to the growth of expenditures on extraction, there were many transportation, construction-installation, and drilling enterprises and organizations that were operating at a loss. Through improvement of financial and economic activity, consolidation and reorganization it was possible to significantly reduce the number of these.

But there are also examples of another kind. In 1987 the USSR KNK and the USSR Ministry of Finance inspected the organization of work for eliminating losses in the USSR Ministry of the Timber, Pulp and Paper and Wood Processing Industry. It turned out that here it was intended to let almost one-third of the currently unprofitable enterprises of the wood-processing industry operate at a loss even up until 1990. The assignments were not supported by any concrete planning developments for assimilating production capacities, bringing wastes into economic circulation or utilizing other internal reserves. One can speak about the lack of control on the part of the ministry over the planning activity of lower units since the enterprises themselves planned 25 percent more losses than envisioned by the assignments of the ministry. Obviously, no mechanism can replace daily economic-organizational work. Unfortunately, report data on the whole for branches of heavy industry confirm this, showing a generally unfavorable picture. In the first half of 1987 losses amounted to almost 500 million rubles and were 30 percent higher than the planned sums. This means that measures to reduce them were drawn up formally and were not backed up by any real, active work.

The instruments for the new economic mechanism directed toward eliminating losses are oriented toward the upper echelons of management and almost do not affect the enterprises. The effect from the implementation of planned measures for eliminating losses or failure is reflected basically in savings or an additional need for money from centralized funds and reserves of the ministry intended for financing losses and expenditures of enterprises that are planned to operate at a loss. So far one can speak in conventional terms about the normative nature of interrelations between the higher agency

and the enterprise that is planned to operate at a loss. Funds are allotted in absolute amounts with an adjustment for the results that have been achieved: less money lost—smaller subsidy and vice versa. It is necessary for savings on funds intended to cover losses to remain at the disposal of the collective that has achieved success in eliminating the losses and not to stay in the remainders of centralized funds and reserves.

Not enough attention is being devoted to incentives for realizing individual factors in increasing the effectiveness and improving the quality of the work. This pertains directly to the activity of the very associations and enterprises that are planned to operate at a loss. Obviously we are not making any big discovery if we say that at many enterprises calculated indicators of the plan are extremely poorly substantiated. The technical, industrial and financial plan in the full volume of intercoordinated forms and calculations is frequently drawn up only when submitting the draft of the plan to the higher organization and the indicators approved by the higher organization are developed in a simplified way. This pertains to estimates of expenditures, calculations and other computations that pertain directly to the task of eliminating the losses.

The fight against losses is a most important section of the special program for financial improvement of the national economy, the need for whose development was determined by the June (1987) Plenum of the CPSU Central Committee. Successes or failures of this struggle through direct or reverse ties mutually influence all constituent elements of financial losses: the level of planning discipline, indebtedness in the economy, the effectiveness of the credit policy, and financial balance. Elimination of losses should be placed at the center of planning, organizational and analytical work as well as the methods and practice of encouraging all units of management of the national economy.

#### Footnotes

1. Lenin, V. I., "Poln. Sobr. Soch." [Complete Collected Works], Vol 4, pp 150-151.

2. FINANSY SSSR, No 10, 1987, pp 29-34.

3. KOMMUNIST, No 13, 1987, pp 16.

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#### Profit Indicators, Wholesale Price System Changes Examined

18200105b Moscow FINANSY SSSR in Russian No 2, Feb 88 pp 22-28

[Article by D. S. Molyakov, doctor of economic sciences, professor, honored scientific activist of the RSFSR, and S. V. Bolshakov, division chief of the RSFSR Ministry of Finance, candidate of economic sciences: "Wholesale Price, Production Cost and Profitability"]

[Text] For a long time an underestimation of the role of the price has made it impossible to transform it into an effective instrument for improving management, increasing production effectiveness, and developing cost accounting. Price setting was oriented toward expenditure methods of development of the economy, which did not make it possible to fully resolve the accumulation of large problems related to justified formation of financial resources, their redistribution within and among branches, and regulation of monetary circulation.

Production cost, profit and cost accounting profitability of many enterprises of a number of branches, because of shortcomings in price setting, reflect less and less the actual level of effectiveness of management. The orientation of prices toward extensive development of the economy deformed the branch structure of net income and incomes of the state. This was largely the result of the inadequately substantiated ratio among prices for products of the extraction branches and machine building, wholesale prices in industry and tariffs for cargo shipments, wholesale and procurement prices, and retail prices for consumer goods and food products. As a result, in a number of areas of the national economy there was profit and profitability that were not always justified and in individual units the income that was received increasingly became formal in nature. A considerable number of enterprises, associations and organizations continued to operate with losses from year to year.

A message of regulating profit and profitability in a form of calculated prices, and systems of increments and differences in prices have become more and more widespread. Moreover the amounts of subsidy regulation of the processes for forming the production cost, profit and profitability have begun to increase. There has appeared a paradoxical situation in which the unsatisfactory state of affairs in price setting has been paid for not only by many enterprises but to an increasing degree by the state budget.

Conducting the intercoordinated restructuring of the price mechanism (wholesale, procurement, and retail prices and tariffs) in keeping with the decisions of the 27th CPSU Congress, the June (1987) Plenum of the CPSU Central Committee and the decree adopted by the CPSU Central Committee and the USSR Council of Ministers, "On the Basic Directions for Restructuring a System of Price Setting Under the Conditions of the New Economic Mechanism," which is directed toward improving the financial situation in the national economy, should create conditions for increasing the effectiveness of production. It is necessary to have greater flexibility in the system of prices and tariffs and to achieve a coordination of their levels not only with expenditures but also with the consumer value of the goods. Profit and profitability of our enterprises and, consequently, budget incomes under the conditions of the operation of the majority of branches on complete

cost accounting, self-supporting production and self-financing should be to a greater degree than before coordinated through the price with the economic effectiveness of items, and the degree of balance of production of products with the needs of the society and the demand of the population. Here there is an essential change in the ratio between centrally established and contractual prices in favor of the latter. In this connection the processes of forming the production cost of products, profit and profitability acquire greater mobility and the enterprises have real possibilities of actively influencing the growth of profit and the recouping of expenditures through contract prices.

The economic mechanism of prices in effect at the present time does not make it possible to successfully solve these and many other problems in the same way. As practice shows, the stimulating role of prices is manifested far from fully and not in the same way everywhere. As a result, it is not possible to mobilize the existing reserves for increasing profit, profitability and payments into the budget. This pertains first and foremost to increasing the output of products of improved quality and in the highest quality category. In 1986 many enterprises and associations of the USSR Ministry of the Petrochemical Industry, Ministry of the Coal Industry, Ministry of Ferrous Metallurgy, Ministry of the Chemical Industry, Ministry of Heavy Machine Building, Ministry of the Electrical Equipment Industry, Ministry of Chemical Machine Building, Ministry of the Machine Tool and Tool Building Industry, Ministry of Instrument Making, Control Systems and Automation Equipment, Ministry of Road Machinery Construction, and Ministry of Light and the Food Industry and a number of other ministries have not provided for fulfillment of the plan for output or the increase in proportion of products of the highest quality category in the overall volume of production that was envisioned by the plan. A considerable number of enterprises and associations of light industry have not fulfilled the plan for producing new goods of improved quality with the index N and enterprises of the Ministry of Heavy Machine Building, Ministry of Instrument Building, Automation Equipment and Control Systems, Ministry of the Automotive Industry of the USSR, the RSFSR Ministry of Light Industry, the RSFSR Ministry of the Construction Materials Industry and the RSFSR Ministry of Local Industry have reduced the output of new products of improved quality with the index N as compared to 1985. All this shows that the stimulating role of the price can be successfully realized only when providing for the necessary interconnection with other elements of the economic mechanism, above all material and technical supply, economic levers and stimuli, among which an ever-increasing role is played by profit, profitability, and economic incentive funds.

The results of the operation of industrial enterprises of the RSFSR, for example, show that in places where an increased price for a high-quality item does not seriously contradict the planned interconnections, one achieves a



positive result and the price manifests fairly fully its regulating influence on the production volume. This is also shown by the data in the table concerning the

fulfillment of the plan for the output of products of the highest quality category and with the index N by enterprises of several ministries during 1986 (Table 1).

Table 1

	Products of the Highest Quality Category		Goods With Improved Quality With Index N	
	Fulfillment of Plan, %	Proportion in Overall Production Volume, %	Fulfillment of Plan, %	
	Planned	Actual		
USSR Ministry of Nonferrous Metallurgy	108.2	36.9	39.4	122
USSR Ministry of Mineral Fertilizers	118.9	37.8	44.7	131
USSR Ministry of the Construction Materials Industry	103.3	24.5	25.0	131
USSR Ministry of Agricultural and Tractor Machine Building	103.3	27.4	28.0	149

From the figures that are given one can see that the application of a higher price for improvement of the quality of the products that are produced for the companies by an above-plan increase in the volume of production of products of the highest quality and those with the index N. But this situation, unfortunately, is not stable under the existing conditions for the application of prices.

When evaluating this circumstance one should keep in mind that the sphere of influence of the price on the regulation of the production volume under socialism is limited by the fact that profit and cost-accounting profitability to not exert a decisive influence on the structure of industrial production. There is no spontaneity or interbranch overflow of capital here and the price is not the only regulator of supply and demand, although it can be utilized more effectively for this.

The new price system should more actively and deliberately influence the organization of cost-accounting relations and create the necessary economically substantiated conditions for increasing the output of high-quality commodity resources and the changeover to complete cost accounting, self-financing and self-supporting production. The basic provisions for a radical restructuring of the management of the economy stipulate improving the relationship between wholesale prices for products of raw material and processing branches. In order to provide for a normal level of profitability of the corresponding branches and encourage savings on fuel and raw material resources it is recognized as necessary to increase prices for raw material and fuel. At the present time the profitability of industrial enterprises of the fuel and energy complex is 8.1 percent while in heavy industry as a whole it is 10.3, branches that produce construction materials and chemical products—10.5, the machine-building complex—13, processing branches included in the agroindustrial complex—15.1, and light industry—23.7 percent.

The need for revising wholesale prices which is directed toward eliminating sharp fluctuations in cost-accounting profitability is evaluated in various ways. Thus Professor D. A. Alakhverdyan links the problem of regulating the system of planned price setting to the development of complete cost accounting of enterprises and the elimination of "unsubstantiated variations in the levels of profitability within the branches and among the branches of the industry." I. K. Salinzhyanov notes that "with a single wholesale price the enterprises will always have different levels of profitability...the amount of profit in wholesale prices is also influenced by: 1) the formation of economically substantiated price ratios, 2) the structure of prices and changes in it..."<sup>2</sup> Differentiation of profitability, in his opinion, is not an argument for revising prices for items.

In itself profitability is not a price setting factor but acts only as a structural element of the price which largely predetermines the actual profitability. Excessive variation in cost-accounting profitability is formed under the influence of changes in price-setting factors and an increase as a result of this in deviations from the initial relationship between the price and value. Methods that are applied for distributing profit in the price of the item do not make it possible to sufficiently take into account the material-intensiveness, energy-intensiveness or labor-intensiveness or the capital-intensiveness of production either. Singling out as basic indicators that determine the major feature of the formation of the branch production cost, even under the conditions of the application of combined methods of determining profit in the price of the item, does not mean the elimination of the effect of other factors that influence the deviation of the actual profitability from the normative one or its differentiation. Moreover, the accounting, distributive and stimulating function of the price is focused in the normative of profitability. All this predetermines the quite predictable contradiction between the fullness of accounting for price-forming factors in the construction of prices for items and the differentiation of the actual



profitability because of objective deviations of the real conditions of production from those predetermined by the established normative of profitability. Otherwise it would be necessary to customize the price system for individual peculiarities of production, which would lead to a loss of the unity and stimulating role of the price. The existing policy for constructing wholesale prices predictably conditions both highly profitable products and those that are produced at a loss. The reduction and elimination of the latter have an effect on the reduction

of socially necessary expenditures and the reduction of differentiation of cost-accounting profitability. In turn, the application of socially necessary expenditures is taken into account when revising wholesale prices.

As a result of the introduction of new wholesale prices and tariffs in 1967 and 1982 and also their improvement in recent years, along with bringing wholesale prices closer to socially necessary expenditures of labor we have achieved an equalization of the profitability of production of branches of industry (Table 2).

Table 2

Indicator	1965	1970	1975	1980	1981	1982	1983	1984	1985
Profitability of industry	13.0	21.5	15.8	12.2	11.5	12.6	12.4	12.1	11.7
Scope of extremes of profitability of branches of industry, points	33.0	31.6	20.9	21.2	21.5	20.3	18.6	16.3	16.8
Variation of profitability of branches of industry from profitability of industry, points	9.9	8.9	6.7	6.8	7.0	6.1	5.5	4.6	4.8

\* Calculated from: "The USSR National Economy in 1988," Moscow, Finansy i statistika, 1981, p. 506. "The USSR National Economy in 1985," Moscow, Finansy i statistika, 1986, p. 551.

The results of the calculations we did show that the changes (revision) of wholesale prices during the period from 1965 through 1985 contributed to reducing the fluctuations of profitability of branches of industry. In 1965 the variation of their profitability amounted to 9.9 points, 1970—8.9, 1981—7, 1982—6.1, 1983—5.5, and 1984—4.6 points. In 1985 fluctuations of profitability increased to 4.8 points.

We shall give the figures from the calculations of the variation of profitability from the industrial level for the machine-building complex, branches that produce construction materials and chemical products, the fuel and energy complex, light industry, and the processing branches of the agroindustrial complex (Table 3).

Table 3

Indicators	1970	1975	1980	1981	1982	1983	1984	1985
Scope of limits of profitability production of points	27.9	18.9	18.6	19.5	16.6	15.5	14.1	15.6
Variation of profitability of production from profitability of industry	10.4	7.4	7.1	7.6	7.2	6.5	5.5	5.9

\* Calculated from "The USSR National Economy in 1985," p. 551.

The data in the table confirm the conclusion we draw concerning the dependency between fluctuations and profitability of production in industry and improvement of price setting. The introduction of new wholesale prices on tariffs on 1 January 1982 and subsequent changes in prices made it possible, in particular, to reduce fluctuations and profitability from 7.6 points in 1981 to 7.2 in 1982, 6.5—in 1983, and 5.5—in 1984. Beginning in 1985 the variation in profitability began to increase somewhat which, in our opinion, can be used as one of the arguments in favor of the need to revise prices and tariffs that arose at the end of the last five-year plan.

The revision of wholesale prices and tariffs as a positive influence on the reduction of the differentiation of interbranch and interbranch profitability of products as well. Experimental calculations of the influence of the revision of wholesale prices in the branches of the construction materials industry confirmed the existing dependency of the fluctuations in profitability of kinds of products on changes in wholesale prices. The results of calculations, for the RSFSR Glass and Porcelain Industry are characterized by the following figures: (Table 4)

Table 4

	Indicators	Most Important Kinds of Products	Rosstroytekhsteko	Vladimirsteko	Rossteklotar	Rosstroykeramika
Variation of profitability of products, points	104.9	99.1	18.8	21.5	17.9	21.0
Before revision of wholesale prices	16.3	18.7	12.4	20.5	12.9	14.8
After revision of wholesale prices	6.4	5.3	2.3	4.7	1.4	1.4

The fluctuations in the profitability of the most important kinds of products of the branch decreased by a factor of 6.4 and there was a reduction of the differentiation of profitability of products in all industrial associations.

The increase or reduction of fluctuations of profitability in industry entailed a change in the completeness of the reflection of the social value of the products in the wholesale prices. Therefore an increase in the differentiation of cost accounting profitability should not be eliminated from the arguments for revising wholesale prices.

The level of the price, profit and profitability is largely determined by the existing policy for accounting for and calculating the production cost of industrial products. This question cannot be regarded in isolation from the changing management conditions. A consistent increase in the production potential has led to an essential growth of the mass of profit that is obtained. Therefore a certain redistribution of the sources for covering a number of expenditures in favor of profit has ensued from the very process of the development of cost accounting. But this redistribution is not limitless. Changes in the policy for the formation of production and profit as a whole have been positive in nature. As a result of profit and not the production cost of products as before it has become possible to an ever-increasing degree to finance expenditures on scientific research and experimental design work as well as expenditures for the assimilation of new technical equipment and products.

Since 1977 the increased expenditures of the first years of "mass-series" production of new kinds of products have been included in the plan and reported production cost of commodity output and have been subject to reimbursement from funds for the assimilation of new technical equipment or the development of science and technology. After 1965 payments on industry for bank credit have been excluded from the production cost and have ceased to influence the overall amount of profit and losses on housing and municipal services as well as expenditures on economic maintenance of cultural and domestic facilities and Pioneer camps. There has been a

change in the composition of the production cost of products of the extraction branches of industry. In 1983 changes were made in the policy for accounting, planning and calculating the production cost of products and therefore also in the item entitled "Raw Material and Basic Materials" include: deductions for geological prospecting work, stump tax and other payments that make up for payments of specialized enterprises for research, prospecting, preservation and processing of natural raw material and its restoration. Payment for water, depending on the nature of its utilization, is reflected in the items of expenditures for raw and processed materials or auxiliary materials. Payments for services rendered by outside transportation are excluded from other expenditures and taken into account in the purchased items, semimanufactured products, work and services of a production nature.

Practice has shown that the most complete solution to problems of substantiating prices and forming profit and profitability insistently demands improvement of the methods of planning, calculation and accounting for the production cost of products and services. Detailed development of a scientifically substantiated policy for determining planned and actual material, monetary and labor expenditures subject to be included in the production cost of products will make it possible to reflect more precisely and completely the actual expenditures of necessary live and embodied labor. Only such expenditures should be used in price setting. The existing practice of planning, calculation and accounting for the production cost of products does not fully meet these requirements, which leads to a distortion of the level of effective self-supporting production and makes it difficult to utilize production cost as well as the points of departure for planned price setting. It is allowed to include in the production cost deductions and expenditures that are not associated with the production of products at the given enterprise, for example, wages with deductions for social security for workers of enterprises who are sent to sovkhozes and kolkhozes for harvesting crops and other agricultural work, the construction of roads, work for keeping up population points, and also wages of workers for the time when they are participating in sports competitions, seminars, symposiums and so forth with leave from production.

When establishing prices one should refrain from the practice in effect in a number of branches of industry of including in the production cost of items expenditures on correcting defects that are discovered in complicated household equipment and durable consumer goods that are sold to the consumer since this does not direct the labor collectives of enterprises and associations to the high-quality manufacture of products since their production cost already envisions expenditures on paying for warranty service for rejected items and also consumer service shops. Moreover at enterprises there is a distortion of the actual state of affairs with respect to the quality of the products that are produced, large losses from the output of defective products are concealed in the production cost, and the profit, profitability and payments for profit into the budget decrease. Correcting the defects that already exist is shifted to consumer service enterprises in the collectives that have caused the defect are not held responsible for rectifying it.

In order to strengthen the economic influence on the quality of the products produced by the enterprises and associations it is necessary to refrain from the practice of including expenditures on guaranteed repair in the production cost of the products and to cover these losses through profit (income) left at their disposal that is used for forming economic incentive funds and at the same time reducing by the sum of these losses the report figures concerning the output and sale of products.

It is also wrong to include in the production cost of products payments into the budget for the utilization of natural resources: payments for timber and for water. By virtue of their economic essence they cannot be included in material expenditures on the production of products since they do not have value and, consequently, should be included in the budget from profit. In order to increase the responsibility of enterprises for economical and efficient utilization of water beginning on 1 January 1982 payment has been introduced for water that is taken by industrial enterprises from water management systems. The practice of recent years has shown that this payment takes up an insignificant place in the incomes of the budget although its introduction has increased the volume of reporting process by financial agencies. In 1986 the proportion of payments for water in the incomes of the RSFSR state budget amounted to about 0.1 percent and its actual amount was one-fifth of the revenues from forestry income and the monthly payments of many enterprises amounted to from 10 to 300 rubles. Because of the insignificant amounts payment for water does not exert an appreciable influence on the production cost, profit, and profitability. As a result, the influence of this payment on the economies of the enterprises and the income base of the budget is only on paper.

The basic provision for a radical restructuring of the management of the economy envisions taking into account in the new prices for the 13th Five-Year Plan, in addition to payment for water and production capital,

payment for land and labor resources, and also expenditures on the protection of the environment. It is necessary to keep in mind that with the existing methods of accounting in the price for payments and expenditures their amounts influence not only the structure of the price but also the concrete proportions of the income of payments into the budget and the substantiation of the indicator of the production cost is the basis of the price, profit and profitability.

Practice shows that in the RSFSR during the course of the formation of the production cost of products there are shortcomings caused in a number of cases by the poor quality of accounting for the constituent elements in the production cost. Take, for example, material expenditures. In the organization of accounting and control over their utilization there are considerable unsolved problems, which affects the objectiveness of the reflection by the production cost of the actual socially necessary expenditures of material resources on the production of the product. Not everywhere have we created the proper conditions for weighing and recalculating the value of raw and processed materials, we do not have enough measurement devices for control over the expenditure of water, thermal and electric energy, gas, compressed air, oxygen and so forth. As a result, there is a reduction of the reliability of accounting and the production cost is frequently elevated while profit, profitability and payments from profit are reduced.

Expenditures on various kinds of startup and adjustment work of a production nature conducted by outside organizations include the wages. But these expenditures are fully included in the purchased items, semimanufactured products, work and services of a production nature and are considered material. There is no clarity in the distinction between material and nonmaterial expenditures and also transportation services rendered by their own or outside transportation organizations. One should also take note of certain other shortcomings in the practice of accounting which to a certain degree disorient price setting and reduce profit and profitability of enterprises in the republic. In particular, they allow writing off on the production cost material values that have not actually been expended yet, that is, the minute they leave the warehouse. Substandard material resources are not always documented under the established policy and they are written off to production expenditures as overruns as compared to the norm.

It is also necessary to improve normative work. Normatives for the utilization of material resources and the output of products are not sufficiently substantiated everywhere and therefore in many cases they cannot serve as a reliable base for establishing really progressive norms of expenditures at a branch level. This is related to the fact that technically substantiated norms and normatives and their prompt revision, on the one hand, influence payment for labor and, on the other hand, they make it possible with the help of price setting to practically fully reveal and put to work all reserves for reducing



socially necessary expenditures made by the producers. Shortcomings in the system are plans assigned to the enterprises, difficulties with supply for a number of products, as, and transportation difficulties, frequently extremely sensitive ones—this is far from a complete list of the most important factors that impede the development and introduction of progressive, which means sufficiently strict, normatives. The solution to this problem is closely linked to the need for more extensive introduction in the economy of the normative methods of accounting for expenditures on production, which makes it possible to compare the actual expenditure of material values with the existing norms and to reveal the causes of deviation as well as the guilty parties. In addition to this at enterprises of many ministers the normative method of accounting has not become properly widespread, which makes it impossible for wholesale prices to objectively reflect socially necessary expenditures and impedes the changeover to self-financing.

In addition to this, in a number of branches of industry (light, the food, meat and dairy, and so forth) where low calculated prices are applied for raw and processed materials which are subsidized from the state budget, the production cost of products does not reflect the actual socially necessary expenditures either. In 1987 subsidies for making reimbursement for the differences between procurement and calculated prices for meat, milk and other products amounted to 58 billion rubles. In this connection it becomes very significant to search for ways of reducing unjustified redistribution processes between agricultural production and industry.

In a number of cases the production cost does not include expenditures which by their nature are a mandatory element of production outlays. For example, expenditures on collecting and returning glass containers in the food industry are not included in the production cost of the products but are written off as losses. It is necessary to increase the role of such an important planning and reporting document as the calculation of the production cost of a unit or product, without which one cannot correctly determine not only the price but also the availability of intrabusiness reserves for self-supporting production.

At many enterprises in the construction materials industry, machine building and metal processing, local, light and the textile industry and a number of other branches there is frequently a lack of correspondence between the fulfillment by the enterprise of assignments for reducing the norms for the expenditure of fuel and energy resources and the observance of the established limits on their consumption. At the basis of this lies the quantitative lack of correspondence between the limit on the consumption of resources and the need for them which is determined taking into account the assignment for reducing expenditure norms. The limit, as a rule, is less than the need for resources determined according to the norms. Therefore sanctions for failure to observe the

limits are applied both against enterprises that are fulfilling assignments for reducing norms and those that are not. If an enterprise as a result of conducting above-plan measures for economy overfulfills the assignment for reducing norms, in order to avoid sanctions for increasing the limit it must reduce its consumption usually by 2-3 percent in excess of the planned assignment that is established without taking into account the need for the resource (for example, electric energy). This gives rise to an understandable desire on the part of individual business executives to increase the norms for expenditure when determining the need for resources for fulfilling the production program, which has a negative influence on the reduction of the production cost and the increase of the profitability of the product.

The elimination of the existing contradiction between the norms and limits is possible, in our opinion, through combining the functions they perform in planning the need for resources, monitoring their release, and calculating the production cost of products. It is necessary to eliminate the existing difference in the functioning of norms and limits and the dual nature of the evaluation of savings (overruns) with respect to these indicators as well as the contradictory nature of their influence on the satisfaction of economic interests of the producer and, finally, it is necessary to reach some general formula for planning and calculating the production cost of products. We should be discussing including limits in planned calculations of products. The dual and frequently many-sided evaluation of the savings on fuel and energy resources at enterprises (based on their fulfillment of norms and observance of limits) does not contribute to strengthening the role of these normatives whose stimulating influence on the reduction of production cost and the growth of profitability can be manifested fully only when one provides for complete unity in planning, calculation and evaluation of the results of the system for economizing. All this leads to the idea that enterprises should have one reference point for economizing on resources in planning and calculating the production cost and providing control through the ruble over the fulfillment of the established assignment. This will contribute to strengthening the influence of planning the production cost on the increased profitability and to surmounting the expenditure approach in price setting.

#### Footnotes

1. Allakhverdyan, D. A., "Finansovo-kreditnyy mekhanizm raz itogo sotsializma" [The Finance and Credit Mechanism of Developed Socialism], Moscow, Finansy, 1976, p 204.
2. Salinzhano, I. K., "Tsena, kachestvo, effektivnost" [Cost, Quality, Effectiveness], Moscow, Finansy, 1979, p 63.

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### Interaction of Enterprise, Central Investment Funds Examined

18200092 Moscow *PLANOVOYE KHOZYAYSTVO in Russian* No 2, Feb 88 pp 60-67

[Article by Candidate of Economic Sciences G. Galakhov: "Priorities and Balance of Capital Investments"]

[Text] Priorities, or preference in the solution of a key problem in a short time, are the basis for centralized economic management. The new economic investment mechanism, along with the centralization of planned management of capital construction, presupposes an expansion of the independence of enterprises and planning and construction organizations on the basis of cost-accounting relations and a reliable balance of all national economic links. Under full-cost accounting and self-financing conditions new approaches and methods of establishing priorities in the planning of capital investments are needed.

The idea of priority in the distribution of resources was put forward in V. I. Lenin's works in the 1920's. It lies in the substantiation of the social need for solving a key national economic problem with due regard for the unity of the latter with production and distribution, the period of effect and optimal extent of the preference, and the gradual and steady transition to proportional development.

A scientific application of priorities in economic management is based on an analysis of a specific economic situation. The long-term economic strategy of the country's development was worked out in precisely such a manner.

The social direction of the capital investment plan increases through the priority allocation of resources in the social sphere and for an improvement in people's working and living conditions. An accelerated introduction of scientific and technological achievements will be embodied in an outstripping development of science-intensive sectors and in an improvement in proportions between extractive and processing sectors as a result of the resource-saving approach to the utilization of fuel and raw material resources.

The tendency toward lowering the rates and absolute increases of capital investments, which had been formed during the last decade, was overcome in the 12th Five-Year Plan. They are rising by 23.6 percent, as compared with 15.4 percent in 1981-1985, and their absolute increase will reach 190 billion rubles as compared with 107 billion rubles during the past five-year plan. As a result, the share of the accumulation fund in the national income should rise from 25.9 percent in 1985 to 27.6 percent in 1990. Such a maneuver is needed for the

attainment of both current and strategic goals. Subsequently, the accumulation share, as envisaged by the 27th CPSU Congress, must be stabilized and even lowered slightly.

The new requirements on the investment process and priority industries follow from the tasks confronting us over a long-term period, when presently established capacities will function. They should be science-intensive, contribute to a fundamental acceleration of scientific and technical progress, and meet rising social needs. The commissioning of capacities should be accompanied by a release of the force of employees and ensure, as a minimum, a more than 2.5-fold labor productivity growth, at the same time, sharply lowering the metal- and power-intensiveness of production and increasing the effectiveness of capital investments.

The use of capital investments allocated for the realization of a specific goal should correspond to such national economic requirements as resource-saving, acceleration of scientific and technical progress, and retooling. At the same time, the priority of a problem will be in effect during its solution by the intensive method with the smallest expenditures of all types of resources. Such an approach lies in gaining time through the concentration of resources when a real national economic effect is obtained.

The transition to the self-financing of enterprises provides that, as a rule, their renovation is made at the expense of their own funds. Budget financing is retained only for the realization of the most outstanding and important state tasks having a priority solution, which will reflect primarily the priority of society's interests.

The economic guarantee of extensive rights of enterprises in combination with self-financing on the basis of full cost accounting is the chief thing in the new economic mechanism. The created investment fund of enterprises is provided with material resources limited by construction-installation and contract work planned by the state.

The combination of state centralized capital investments and funds of enterprises so that priorities during the realization of structural and investment policy are not excessive within the limits of material-technical and financial resources allocated for capital construction becomes the basic problem. With due regard for national economic priority directions in the distribution of capital investments the following equation can be formed. Their total volume provided with material-technical and financial resources ( $KV_{\text{abs}}$ ) less capital investments allocated for the development of the social sphere and strengthening of the country's defense capacity reflecting general state needs ( $KV_{\text{gen}}$ ) will be equal to the sum of the following products: the necessary increase in products produced by priority sectors ( $R_p$ ) multiplied by specific capital investments ( $UKV_p$ ) necessary for attaining it and the increase in the output of sectors not having

priority development ( $R_n$ ) multiplied by the necessary specific capital investments ( $UKV_n$ ):

$$KV_{nkh} - KV_{n-} = R_n UKV_n + R_n UKV_{n-}$$

It follows from this equation that the excessiveness of priorities begins with an increase in general state needs and in the output of priority sectors in a volume not covered by a reduction in specific capital investments, when their remaining share is not sufficient to ensure an increase in the output of other sectors. The quantitative limit of the excessiveness of priorities can be determined only in a single balance calculation of the distribution of capital investments, considering alternative ways of meeting the need for products and services. In connection with this the expressed statement that all priorities in sum should not exceed in the volume of the need for capital investments one-third of their volume throughout the national economy evokes doubt (1). As far back as 1986 projects for nonproduction purposes made up 28.2 percent in the total volume of capital investments and 4.1 percent, throughout industrial sectors of group B.

A fixed share of priority sectors with a given amount of materially and financially secured capital investments reduces the possibilities for an economic maneuver. This signifies that production capital investments should have the appropriate level of efficient utilization, or that there is a need for additional material-technical and financial resources for capital construction when previously envisaged basic indicators of economic development are revised.

Proceeding from the goal of attaining the necessary effectiveness of production capital investments in the long-term plan, a selection should also be made of technological, new methods of production and of the form of reproduction of fixed capital, of course, with due regard for the social need for products and limitations of material-technical and labor resources.

Preference in the changes of the structure of capital investments according to reproduction forms (retooling and reconstruction) and according to the time of their implementation (carry-over and start-up construction projects) and other intrainvestment priorities become mandatory conditions during their distribution.

If the rates of increase in the effectiveness of capital investments outstrip the increase in the need for priority products or services owing to the accelerated development of a sector through the retooling and reconstruction of enterprises and intensification, their volume can be maintained at the level of the past period. In this case the shortening of construction periods with their corresponding distribution throughout the years of the planned period according to standards of the length of project construction and concentration of material and labor resources at start-up construction jobs is the criterion of the sector's priority development.

The problem of determining and classifying priorities will remain purely theoretical if under the conditions of the new economic mechanism economic methods of managing priorities with due regard for the Law on the Enterprise are not developed. The concentration of resources on retooling and reconstruction cannot be directly established by a superior organization, but should be taken into consideration as the sum of proposals by a production collective and be the expression of the preference confirmed by an enterprise.

Obviously, in order to maintain priority in retooling, there is a need for privileges and economic sanctions creating conditions under which preference would be given to retooling, not to expansion, especially in the country's European part, where the bulk of the funds earned by enterprises will be utilized in the future.

The task of improving the material and technical base of the social sphere as a priority direction will be accomplished in long-term plans on the basis of a systematic and stage-by-stage attainment of standards of the population's provision with housing, hospitals, schools, kindergartens, clubs, and other social and cultural projects. Stages in the attainment of standards directly depend on the level of effectiveness of capital investments for production purposes.

In our opinion, the existing stereotypes of priorities usually accompanied by an increase in the share of capital investments for the development of a sector in their total volume in the national economy reflect the expenditure mechanism in planning, ignoring time, quality, and efficiency factors. Under intensification conditions priority is characterized by the time spent on the solution of a problem, depending on which all types of resources are concentrated. The period of establishment of new production capacities and their efficiency as a reflection of the fundamentally new method of meeting society's needs will be the main generalizing priority indicator in the investment sphere. In 1987-1988 the demand for the observance of construction length norms became one of the basic conditions for the inclusion of carry-over and newly begun projects in the plan and the comparison of their technical and economic parameters with world analogs, one of the indicators of the title list making it possible to evaluate the quality of the plan scheduled for implementation.

The effect of the forms of property and sources of capital investment financing on priorities and involvement of various economic sectors in the investment sphere are the specific characteristics of determining priorities under self-financing conditions. Over the long-term period all possible incentives for cooperative and individual labor activity and an active utilization of the population's funds for an accelerated development of cooperative and individual housing construction should stop the existing tendency toward reducing the share of capital investments at the expense of the funds of the population and cooperative organizations. The solution



of the urgent problems of preserving agricultural products will require stirring up the investment activity of kolkhozes both at the expense of their own funds and long-term credits. Under full cost-accounting and self-financing conditions an enterprise, using means of production in public ownership, independently ensures not only an improvement in production, but also the collective's social development.

Enterprises have been granted wide independence in the distribution of earned funds. The labor collective council makes the decision on the utilization of the funds for the development of production, science, and technology and for social development.

The establishment of priorities becomes a form of economic effect on enterprises and should be transformed into the management of interests through interests with the utilization of economic methods.

Standards serving as a quantitative measurer of individual aspects of the development of a sector or a region occupy a special place in the determination of priorities. Taking into consideration that long-term economic standards should determine not only mutual relations with the budget and the formation of the wage fund and economic incentive funds, but also other aspects of economic activity, in our opinion, it is also necessary to develop a system of standards and normative indicators for the planning of capital investments.

Such a system can reflect the following: normative indicators forming part of control figures (maximum specific capital investments for an increase in commodity output throughout a sector for ministries; maximum specific capital investments per released worker); long-term economic standards stable for the entire five-year plan (standards of provision with projects for social and cultural purposes, normative construction and planning periods, norms for the mastering of production capacities, norms of recovery of capital investments, and standards of deductions into funds for the development of production, science, and technology and for social development).

Normative indicators should be worked out by the USSR Gosplan with the participation of other interested departments with due regard for the effectiveness of capital investments envisaged in Basic Directions and be reported to ministries. On their basis ministries and departments present to enterprises as control figures only the levels of specific capital investments per unit of commissioned capacity and during retooling and reconstruction, for an increase in capacity. The remaining indicators are used for a normative evaluation of proposals by enterprises. In accordance with the Law on the Enterprise control figures concerning effectiveness will not be of a directive nature and should be used by ministries and departments during decision-making, the selection of plans, and the conclusion of economic contracts for capital construction.

It is important to work out standards of deductions into funds for the development of production, science, and technology, as well as social development, on the basis of normative conditions of activity of sectors, ministries, and enterprises, that is, with due regard for standards regulating the investment cycle. The formation of economic standards used in capital investment planning is necessary during maximally short periods in order to utilize them in the development of the 13th Five-Year Plan and to begin the establishment of a system of state norming of capital investments for all the levels of their planning.

The program-oriented method of planning as a means of the planned concentration of forces at key economic problems was reflected in a number of national economic programs, such as the Food Program, the Energy Program, the Program for the Development of Machine Building, the Overall Program for the Production of Consumer Goods and the Service Sphere, the Program for the Chemicalization of the National Economy, and scientific and technical programs ensuring the realization of priority problems at a different level. They quite profoundly study the interconnections of sectors, coordinate their functions in the attainment of a common goal, plan stages in solution, and determine intraprogram priorities and the order of realization of tasks.

However, the existence of a program as an independent document and the variant development of a state plan create contradictions. The plan cannot be considered the sum of previous programs formed in an isolated manner and the latter cannot undergo iterative changes, especially in the part of capital investments. The inclusion of programs as constant values in the plan reduces economic maneuvers with resources. For example, the Food Program and the Energy Program encompassed one-half of the investment resources in the 12th Five-Year Plan.

The role of the "set up" part of national economic planning, first of all, the Concept of the Country's Social and Economic Development for 15 Years, is rising at present. "It should absorb all the major programs, balance them, and determine the ways of attaining strategic goals," M. S. Gorbachev noted at the June (1987) Plenum of the CPSU Central Committee. "The five-year plan with a distribution of its assignments throughout the years of the five-year period, in fact, should become the basic form of general state planning" (2).

An analysis of capital investments required for the realization of programs shows that the same projects are included in different ones. Therefore, there is a need to coordinate all capital investments, excluding a relation in the form of a balance drawn up in columns and lines. Moreover, under the new conditions a portion of the program assignments will coincide with the sphere of independent investment activity of enterprises.

During the transition to self-financing and with the promulgation of the Law on the Enterprise programs are limited by centralized resources and the total volume of capital investments necessary for their realization will be of an estimated nature.

The expansion of the economic independence of scientific, planning, and construction organizations and enterprises, change in the functions of central bodies, and new requirements for the formation of state plans—all this puts forward the task of transforming individual planned calculations according to the balance of investment activity into the balance of capital investments. Such tools in a single balance calculation would make it possible to substantiate the priority development of complexes of sectors, to find optimal correlations of state resources and funds of production collectives, and to form an investment fund of an enterprise and of a national economic sector for a long-term period.

In accordance with the Law on the Enterprise the investment fund is only partially determined by economic standards of the formation of funds for the development of production, science, and technology and for social development, or of other funds for a similar purpose. Future expenditures of an enterprise, which are of a noninvestment nature, should be deducted from the sum of calculated resources. In the fund for the development of production, science, and technology they include scientific research financing, increase in internal circulating capital, and other expenditures for purposes of production development; in the fund for social development, expenditures on the maintenance of social and cultural projects, implementation of health-improving and mass cultural measures, and satisfaction of other social needs.

According to our calculations, at present the share of noninvestment expenditures (including the change in remainders of carry-over funds at the beginning and end of a period), on the average, makes up approximately 40 percent of the calculated capital in the development fund and 70 to 80 percent in the fund for social development. An analysis of the sources of the investment fund contained in the Law on the Enterprise shows that, essentially, a normative formation of fixed capital creates only the financial prerequisites for the formation of capital investments. The development of an enterprise depends not only on profit and depreciation, which is stable irrespective of the results of economic activity and acts as a source of renewal of funds, but also irrespective of the mechanism of redistribution of capital investments between production collectives and sectors.

Under self-financing conditions capital investments are not allocated for an increase in output, but, conversely, financial resources for ensuring such an increase and expanding the scale of investment activity are created according to the earned money. Owing

to the stability of standards during the entire five-year plan, the capital credited to funds will begin to increase as profit grows. As a rule, it will be the highest during the last year of the five-year plan, whereas the solution of priority problems requires it basically during the first years. As a result, the financial reserve of an enterprise or credit will be necessary. Since the growth of profit may not coincide with the increase in material resources allocated for capital construction, the transition to the normative formation of the investment fund of an enterprise for the stabilization of standards during the five-year plan necessitates the planning of a reserve of capital investments provided with material and technical resources and capacities of construction organizations at a national economic level.

The free granting of state funds, as before, retains the striving of sectors and enterprises to obtain them primarily from the state budget and to fall into the sphere of effect of the state order, which guarantees stable financial sources. In our opinion, in addition to a competitive distribution of the state order, by analogy with the granting of credit, it is important to introduce, beginning with the 13th Five-Year Plan, the payment for utilized state allocations with due regard for their return by a sector or an enterprise on the basis of normative construction and recovery periods.

The schematic diagram of the balance of capital investments for an enterprise, a sector, and the national economy can be represented in the form of an equation: creation of an investment fund reflecting all the forms of mobilization of resources and the directions in its use. Depending on the level of planning and the stage of plan development these directions can be detailed with a varying specification.

During forecasting and long-term planning at the national economic level for a Union republic or a large region it is sufficient to describe the creation of the investment fund according to all sources of financing, the technological structure of capital investments, and their balance with the delivery of equipment and the division of construction and installation work into contract construction and the economic method.

For a description of basic proportions in the formation of the value aspect of capital investments at the national economic level it is necessary to take into account the sources of financing for all types of property. The material and physical aspect of the components of capital investments out of the great number of consumed products can be described in a consolidated manner by such types of material resources as ferrous and nonferrous rolled metal, cement, timber, wall materials, and precast reinforced concrete structures, which predetermine the structure of the balance of structural materials. The latter, reflecting the change in proportions in materials,

articles, and structures consumed by construction, affect material expenditures, which make up more than one-half of the construction and installation work. The consolidated approach to the division of construction and installation work into contract and economic methods and the data on possible deliveries of equipment will make it possible to coordinate the elements of the technological structure of capital investments.

It is important to balance the use of capital investments with the created investment fund with due regard for the received capital allocated for capital construction, its reserve, and its change at the beginning and end of the period. The capital provided with equipment and construction-installation and planning work for a sector, a region, or an association should correspond to the directions in the use of the investment fund, including the transfer of capital to other sectors, enterprises, or local bodies. When forecasting directions, it is sufficient to reflect in the structure of capital investments their sectorial, reproductive, and territorial aspect in order to take into account the change in key indicators.

During a consolidated calculation of the use of capital investments, first of all, it is necessary to take into account the effect of the reproductive and sectorial structure on their technological structure, because the front of construction and installation work depends primarily on the structural changes of these components. The territorial aspect is an important factor in the distribution of capital investments. At the beginning of the elaboration of a balance its effect can be taken into account by means of consolidated coefficients with subsequent detailing down to singling out concentrated construction regions.

The degree of accuracy of the consolidated balance will increase as structures of capital investments characterizing various aspects of creation and use and detailing the expenditures of resources throughout sectors, ministries, carry-over and newly begun construction projects, start-up projects, projects under way, and so forth, are introduced.

The need for detailing depends on the planning task and stage. As the practice of consolidated calculations of individual elements of such a balance shows, during the preparation of the 12th Five-Year Plan basic structures of capital investments, according to the forms of property and technological, reproductive, and sectorial structures, make it possible to determine the possibilities for the priority development of sectors with a sufficient accuracy at the stage of Basic Directions.

In the course of iterative calculations the selection of variants is made on the basis of ensuring the necessary increase in output with the smallest possible specific

capital investments within the limits of financial, material-technical, and labor resources determined by national economic proportions.

The interconnection of the structures of capital investments with the effectiveness of the latter can be taken into account through specific capital investments and their recovery. Specific capital investments are equal to the ratio of the increase in profit to the increase in output multiplied by the recovery. Through this equation investment activity is connected with the results of production activity and the rise in the level of intensification.

Using the interrelationships of the structures of capital investments, it is possible by means of their balance to determine the development of priority and nonpriority sectors in interconnection with the future change in other investment priorities, that is, increase in the shares of equipment in the technological structure, of the retooling and reconstruction of enterprises in the total volume of resources, and of the transfer of concentrated construction to the country's eastern and northern regions. Taking into account, simultaneously with the structural interconnections of capital investments, national economic, intracomplex, or intrasectorial limitations will narrow the range of possible solutions to the necessary accuracy and will make it possible, by means of the structural optimization of investment activity, to consider alternative solutions and to take their efficiency into account. The elaboration of such a balance is possible in the form of interconnected direct planned calculations, or in the form of a model with the application of computers. Such a model can be managed by establishing national economic limitations on the most important resources and the necessary changes in the structure of capital investments.

In our opinion, the use of a model interpretation of the balance in the system of models of the intersectorial balance and in the unified system of capital construction planning as the set up unit is the most promising. In this case the balance of capital investments should be closely interconnected with construction and planning and surveying units and, in addition to the above-noted interrelationships, supplemented with units determining the commissioning of capacities and the territorial distribution of capital investments. These units, operating in interconnection with the balance of capital investments, will expand its functions and make it possible to change over from forecasting to the elaboration of recommendations on the regulation of the investment process.

The method of structural optimization of capital investments is also possible at the level of ministries and large associations. The components of the balance with due regard for the specific nature of the level will change and new limitations will appear. The technology of calculation and criteria will be common for all



levels. The use in the consolidated balance of the normative basis will make it possible to avoid frequently used and often uncoordinated expert evaluations and forecasts and will raise the scientific substantiation of calculations.

Thus, the theory of priority should be directed primarily at shortening construction periods, raising the effectiveness of capital investments, and increasing national economic efficiency, ensuring a balanced development. The essence of priorities under the new conditions of management lies in this.

Footnotes

1. See: PLANOVOYE KHOZYAYSTVO, 1987, No 11, p 48.
2. "Materialy Plenuma Tsentralnogo Komiteta KPSS, 25-26 iyunya 1987 g." [Materials of the Plenum of the CPSU Central Committee, 25-26 June 1987], Moscow, Politizdat, 1987, p 53.

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## LIVESTOCK AND FEED PROCUREMENT

### PRAVDA on Adjustment to Changes in Livestock Sector

#### Inefficiency in Animal Husbandry

18240053 Moscow PRAVDA in Russian 15 Dec 87 p 1

[Editorial: "Contract and Cost Accounting at Livestock Sections"]

[Excerpts] Livestock section workers will have large-scale responsible tasks next year. The production of meat will have to be increased to 18.9 million tons and of milk, to 105.5 million tons. The purchase of 1 million tons of livestock and poultry, 3 million tons of milk, and 2.7 billion eggs in excess of the calculations for the five-year plan is envisaged. In order to attain such goals and to develop success, it is necessary to more boldly utilize intensive factors in productivity growth and not to postpone this to tomorrow, but to get down to business right away.

The collective contract and cost accounting are ever more profoundly invading the economy of kolkhozes and sovkhozes. Most livestock is already being serviced according to the new principles and fodder crops are being grown on sizable areas. However, the sense of the advanced and the new is by no means characteristic of everyone. This is also discussed in the recently adopted decree of the CPSU Central Committee "On Serious Shortcomings in the Work of Party, Soviet, and Economic Bodies in Chelyabinsk Oblast on Mastering Economic Factors in Animal Husbandry Intensification." It is precisely the underestimate of such factors and the attempt to manage the sector while looking back to old thinking that have led to the fact that in the oblast the assignments of the Food Program are not fulfilled and per-capita meat production has decreased. As a result, deliveries of livestock products from the Union-republic stock to the oblast have increased considerably.

Letters received at the editorial department also attest to the noncorrespondence of the level of organizational work to tasks concerning the sector's intensification, to the formal approach to mastering innovations, and to the inattentive attitude toward people. For example, this is what calf attendant A. Parshenkova reports: "We water calves and steam feed manually. The barn is not heated, water freezes during bitter frost, and the conveyor breaks down. Rations are meager and even these are not observed. Except for the veterinary surgeon none of the specialists visits the livestock section. Living conditions are not even worth talking about. There is no place to change one's clothes and to get warm. In this connection we turned to the farm administration, to the RAPO, and to the rayon party committee. But everything was to no avail."

Why are some managers of kolkhozes, sovkhozes, and agro-industrial associations and committees so unresponsive to the demands of the time? Some do not want and others at times are unable to work according to the new method. Does this not explain the fact that a number of farms in Dagestan, Kabardino-Balkaria, and Chita and Astrakhan oblasts try to fulfill the delivery plan in quite a distinctive manner—deliver low-weight and emaciated animals to meat combines? Are the reduction in the sale of milk to the state in Tajikistan and Armenia and the decrease in weight gains in cattle on a significant number of farms in Tambov and Rostov oblasts not connected with the specialists' dulled sense of responsibility? As checks show, on many kolkhozes and sovkhozes in these and other oblasts animals have not been promptly transferred to stabling and livestock sections have not been staffed sufficiently. Party and local Soviet bodies should attentively listen to the life pulse of this important rural sector. Some should be called to account and others should be promptly given help and support.

A strained situation with respect to the provision of livestock with fodder is formed in a number of regions. Although throughout the country more fodder than last year was stocked, nevertheless a feed shortage is felt on a number of farms in Azerbaijan, as well as in Pskov, Novgorod, Kostroma, and some other oblasts. The conclusion is clear: It should be used more efficiently. But what is the situation in practice? Almost one-half of the capacities of feed shops are inactive in Azerbaijan. One-fifth of the cattle sections do not have them at all. Mineral and vitamin additives are used poorly.

At the scientific and practical conference on the agro-industrial complex held at the CPSU Central Committee recently it was noted that party committees and agro-industrial bodies now do not have a more important task than the development of people's creative initiative. The mastering of the contract and cost accounting in unity with production intensification becomes the most important criterion for evaluating the activity of party, Soviet, and economic bodies. Every field, livestock section, and brigade should have its own truly solicitous master for a long period. In order that this master may know his business perfectly and be armed with knowledge, his training must be organized everywhere.

The creation of the necessary working and living conditions for livestock section workers should be in the center of attention of party organizations. Unfortunately, the situation with respect to this is by no means satisfactory everywhere. Many farms do not cope with plans for the construction of housing, preschool institutions, and cultural projects. What are words of attention to people, for example, in Krasnoyarsk Kray worth when at a significant number of local livestock sections livestock breeders at times are not ensured elementary conditions for normal labor. And what, if not careless behavior, can explain the construction of a modern fattening complex on the Perm Kungurskiy Sovkhoz without a red corner, locker room, and other everyday

conveniences? As we see, restructuring has by no means affected the manager's psychology everywhere. Man still often remains in the background of attention, while party organizations tolerate such facts.

Wintering took off for long, difficult months. Managers and specialists of agro-industrial committees and associations, kolkhozes, and sovkhoses must establish reliable control over its course. It is important to help livestock section workers to more fully utilize the stabling period for increasing output and realizing the decisions of the 27th party congress.

#### Advanced Animal Husbandry Collectives

18240053 Moscow PRAVDA in Russian 20 Jan 88 p 1

[Editorial: "Apply the Experience of Advanced Workers"]

[Excerpt] The overall approach to work organization and the ability to fully utilize intensive factors in production development ensure success. Farms are modernizing livestock sections, retooling them, and introducing advanced technologies. The efficiency of the collective contract and cost accounting is great. Having mastered them, the Kolkhoz imeni Chapayev in Dzerzhinskiy Rayon, Kaluga Oblast, was able to raise the profitability of hog breeding from 2 to 51 percent and to increase output considerably. It is time for lagging workers to adopt the experience of advanced ones not in word, but in deed.

With the transition of kolkhozes and sovkhoses to full cost accounting and self-financing the value of every bit of practical experience under conditions of the new economic mechanism increases. In the country there are many collectives, which for a long time have not asked the bank for credits, but have lived on their own resources. Agro-industrial associations and committees should more fully analyze their practice and more actively lean on it when improving the economy of livestock sections. However, good initiative and advanced experience are often in vain. Who out of Armenia's rural specialists did not hear about the good deeds of the Dzhararatskiy Sovkhoz, where the flow-shop milk production system, which ensures an annual milk yield of 4,500 kg per 1,000 cows, has been in operation for several years? However, do many of the republic's collectives follow this example? No. The new system was introduced only at individual livestock sections. The Armenian SSR Gosagroprom should seriously begin disseminating this good initiative. After all, the average milk yield in the republic has dropped, totaling only 2,173 kg.

It is well known that a high efficiency of livestock sections largely begins from the fodder field. Successfully realizing the overall "feed" program, in the last 5 years agroprom workers in Grodno Oblast have been able to increase fodder production 1.5-fold and to raise milk yields to 3,200 kg. Such results can be obtained virtually everywhere if local party and economic bodies systematically and purposefully solve urgent problems and actively lean on advanced experience. To this day,

however, many of them accept the fact that some kolkhozes and sovkhoses are not concerned about fodder at the proper time. A number of farms in the Georgian SSR and in Kalinin and Novgorod oblasts year after year send messengers for straw to other oblasts and republics. It is good if a good neighbor is nearby. At times, however, it is necessary to transport fodder over hundreds and thousands of kilometers. How to explain such a practice? Is there a shortage of land? No, grass on tens of thousands of hectares has remained unmowed in Kalinin and Novgorod oblasts. Bad weather has hindered this! However, advanced collectives, which are under the same sky, always have hay, silage, and haylage. One conclusion suggests itself: Mismanagement and a thoughtless attitude toward the sector's needs are to blame.

Many rural partners also slowly restructure themselves and react to new requirements in an insufficiently active manner. The work of the USSR Ministry of the Medical and Microbiological Industry was discussed at permanent commissions of the chambers of the USSR Supreme Soviet. It was noted that the rates of growth of protein feed additive production do not fully meet the tasks of the Food Program. Less than one-half of the need of agriculture for microbiological protein is met and there is an acute shortage of feed lysine, vitamins, and premixes. Livestock breeders have serious claims against mixed feed and a number of other sectors.

The transition of farms to full cost accounting and self-financing also sets new tasks for party organizations and rural specialists. It is necessary to follow the processes of the sector's development every day and to teach people to work according to the new method and to observe the basic precept of the economy—to spend less and to obtain more. For example, if fodder is utilized efficiently and feed shops operate effectively, milk yields and weight gains will increase. If sets of machines, locker and shower rooms, restaurants, and medical centers appear at livestock sections, the productivity of livestock breeders' labor will increase and work time losses due to diseases will decrease. And how many possibilities are inherent in the replacement of unproductive herds with highly productive ones, in the fight against the technical backwardness of the processing base, and in an active involvement of private homesteads and subsidiary farms of enterprises in the replenishment of meat and dairy resources! There is only one thing that cost accounting cannot accept—waste and sloppiness.

Specialists are now listening closely to the winter pulse of livestock sections. Is it not dying away? Is the flow of output not decreasing? After all, by the new year many farms have decreased the livestock population, but meat and milk procurement plans have remained stepped-up. This means that it is necessary to search for new potentials in order to successfully fulfill the assignments of the Food Program.

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## BUILDING MATERIALS

### Building Materials Conference Discusses, Recommends Some New Items

81442239 Moscow STROITELNYYE MATERIALY in  
Russian No 10, Oct 87 pp 12-14

[Article by L. S. Elkind: "For an Acceleration of Scientific and Technical Progress in the Building Materials Industry (According to Scientific Papers Read at Belgorod)"]

[Text] In order to speed up scientific and engineering progress, the 27th CPSU Congress and the January 1987 CPSU Central Committee Plenum posed the tasks of greatly improving use of the potential of the higher schools, expanding considerably the amount of scientific research and development performed, and achieving a sharp rise in their yield to the national economy. In this connection, closer interaction of the academic, industrial and higher-education sectors of science is necessary.

Acceleration of the development of equipment and technology and increased intensification of production and the economy's effectiveness require a sharp turn in science toward production needs, particularly those of the building-materials industry. A comprehensive discussion of the industry's problems that have come to a head was held during scientific readings at the Belgorod Technological Institute for Building Materials imeni I. A. Grishmanov which were dedicated to the 70th Anniversary of the Great October Socialist Revolution.

The scientific readings occurred within the framework of the All-Union Conference, "Acceleration of Scientific and Engineering Progress in the Building-Materials Industry," which was organized by the USSR Ministry of Higher and Secondary Specialized Education, the USSR Ministry of Construction Materials Industry, the Belgorod CPSU Oblast Committee, and the Belgorod Technological Institute for Building Materials imeni I. A. Grishmanov.

Those wishing to speak were given the floor at two plenary sessions and in eight sections that worked by thematic area.

I. I. Miroshnichenko, rector of the Belgorod Technological Institute for Building Materials and Doctor of Mathematical-Physics Sciences, opened the conference. He defined the purpose of organizing it in particular as the selection of a strategy for a scientific search within the construction industry and the building-materials industry. A basically new approach to the creation of industrial processes that are based on technology that does not cause destruction of the ecological environment should be an inalienable part of restructuring within the building-materials industry.

The Soviet people are greeting the 70th Anniversary of the Great October in an environment of restructuring, which is gaining in all spheres of public life. The firm course for accelerating the country's social and economic development that our party has adopted requires the execution of urgent steps for improving the economic mechanism that are based in particular on the universal introduction of scientific and engineering achievements. These thoughts were sounded in the report, "The 70th Anniversary of the Great October and the Process of a Revolutionary Updating of Socialist Society," by Ya. Dyatchenko, secretary of the institute's party committee.

The higher school and its science personnel are living in the environment of restructuring. V. P. Popko, a representative of USSR Minvuz [Ministry of Higher and Secondary Specialized Education], spoke about the tasks of vuz science in the light of the restructuring of USSR higher education and the rise in its role in accelerating scientific and technical progress. The integration of science with production will become one of the main subjects of restructuring by this element.

The reports of the section leaders were heard during a plenary session. The specialists reports were read and discussed within the sections.

The reports and communications of the section, "The Physical-Chemistry and Materials-Physics Bases for the Production of and Research on Building Materials," were dedicated to an examination, based on physical chemistry and mathematical physics, of the processes of structure forming, the shaping of properties, and behavior under operating conditions of building materials.

What is the role of physics in the production of modern building materials? This was one of the aspects of the report of I. I. Miroshnichenko, doctor of mathematical-physics sciences. Use of the methods of physics physics—the laser, radiation-beam equipment, and so on—allow the speed of industrial processes to be increased severalfold and the properties of building materials to be improved. The role of physics in basic research is great.

The acoustic-emissions method (research by the Minsk NIISM [Scientific-Research Institute for Building Materials]) will help to speed up evaluation of the cold resistance of materials. The institute's scientists proposed to use it for monitoring the quality of cellular glass. The possibility of determining the composition of calcium aluminoferrites in industrial cement clinker by means of nuclear gamma-resonance spectroscopy (the work of scientists of the Belgorod Technological Institute for Building Materials (BTISM) imeni I. A. Grishmanov) has been proved.

The Riga Polytechnic Institute has, by intentional change of the physical and chemical properties of bulk clay in a plastic state, obtained constructional and facing

brick based on carbonate and noncarbonate hydromicaeous clays that have better indicators for cold resistance and strength, as well as new sound-insulating and decorative ceramic materials based on low melting-point clays and fillers.

A large portion of the reports in the section, "Promising Areas in the Technology for Producing Binders," reflected the prospects for improving cement production: development of the dry method, improvement of the heat-engineering characteristics of heat and mass exchange in rotating furnaces, and so on.

A scientific search for additives for cement clinker is being conducted actively among the waste and byproducts of man's production activity.

Noted in particular was the most interesting communication written by A. P. Zubekhin and V. V. Kitayev of the Novocheerkassk Polytechnic Institute, "The Whiteness and Color Index of Portland Cement Clinker." The researchers took a fresh look at the physical-chemistry essence of the change of whiteness and color index of portland cement. The possibility of neutralizing the coloring effect of Fe, Mn and Ti impurities in the clinker appeared, thanks to which the way is paved for expanding the raw-materials base for producing high-quality white portland cement and colored cements.

In studying the properties and duration of the induction period of cement hydration, Kiev Polytechnic Institute scientists pursued the aim of improving hardened cement stone. The guiding influence of the cementing material on hydrate formation by optimal mechanical action and the addition of electrolytes and highly dispersed minerals enables the structure-forming process to be modified and the cement's binding properties to be increased.

In order to get composition cementing materials with special properties, the Dnepropetrovsk Chemical Technology Institute studied unused chemical-industry waste (the production of succinic and orthophosphoric acids and soy-bean meal, as well as leucopol and alkaline-water effluent from caprolactam production). The times for gypsum-binder setting are being slowed, and the stripping strength of gypsum products with simultaneous introduction into the cementing substance of leucopol and alkaline-water effluent from caprolactam production in concentrations of 0.25 to 0.5 percent (by weight) is increased. The additives are recommended to the industry's gypsum enterprises.

Many scientific-research organizations are viewing correctly the problems of using industrial wastes in the national economy, even from the social point of view. Resounding addresses at the section, "Expansion of the Raw-Materials Base, Comprehensive Use of Mineral Resources and Wastes of Related Production Facilities for Obtaining Building Materials, and Preservation of the Environment," will serve as confirmation.

Scientific collectives of BTISM, Odessa Polytechnic Institute, the Odessa and Rostov Construction Engineering Institutes, VNIISTroyopolimer [All-Union Scientific-Research Institute for the Construction of Polymer Industry Enterprises], and others are doing development work on protection of the air basin, work safety, and improving the environment.

Odessa Construction Engineering Institute specialists, as the result of an instrumented survey of sources that liberate and discharge harmful substances into the atmosphere at Odessa Reinforced Concrete Products Plant No 1, found 12 sources of air pollution. Measures were worked out for reducing the level of discharges of dust and for bringing them down to the standard values of the maximum permissible discharges into the atmosphere (PDV). Implementing them at the plant will enable discharges of harmful substances to be reduced, the environment to be made healthier, people's working conditions to be improved and the trapped products to be returned to production. This is a real contribution by scientists to solution of the problem.

The papers of the section, "Technology of the Production of Compositional Materials and of Constructional Structure and Articles with Corrosion-Resistant Coatings," were dedicated to the creation of new compositional materials, improvement of the technology of existing materials, optimization of components and their technological parameters, quality control, and search for modifying additives. Attention was also devoted to traditional materials: concretes, polymer compositions, glass enamels, and so on.

Materials whose properties change, not only with direction (along one or all three coordinate axes) but also with distance, are called variotropes. They include cellular concrete of variable density. It is made by rolling the incoming unhardened cellular-concrete mass above the sides with a machine designed by UralNIISTroyproyekt [Ural Scientific-Research Institute for the Design of Building-Materials Industry Enterprises]. The institute also developed other methods—chemical, physical, and thermal, which increase concrete density in practically any localized zones of the article.

The NIISM [Scientific-Research Institute for Building Materials] (Minsk) has created effective thermal insulated concrete based on granulated foam glass—glass-keramzit concrete and large-pore glass concrete with densities of 600-850 and 250-350 kg/m<sup>3</sup>, respectively. Superlight-weight sand obtained in rotary kilns from frothed glassy raw material serves as fine aggregate.

Lightweight concretes obtained with the use of granulated foam glass is cold resistant, so they can be used for making one- and three-layer outside enclosure for buildings. Large-pore glass concrete based on granulated foam glass in 5-20 mm fractions can serve as the insulating layer in three-layer outside wall panels.

Scientists of this institute have studied the properties of aerated concrete soaked with oil-asphalt compositions— aerated- concrete roofing. Impregnated water-insulation made of aerated- concrete slabs (depth of impregnation from 20 to 5 mm) for use in sloped roofs can last from 1.5 to 15 years under moist conditions.

Polymer materials based on epoxy acrylates obtained by the radiation hardening method, under low absorption doses acquire good physical and mechanical properties and water- and chemical-resistance (data of research performed at the Kharkov Polytechnic Institute imeni V. I. Lenin testify to this), and can serve as a corrosion-resistance coating, as a glue, and as a compound.

Specialists of the Mariysk Polytechnic Institute are working on the problem of obtaining effective lightweight materials for rural construction (of livestock and fowl complexes, mineral-fertilizer warehouses, trench silos, and so on), which experience the effects of aggressive media. In order to modify the structure of keramzit concrete, manganese dioxide—waste from the production of nicotinic and ascorbic acids—were introduced here. From the results of the experiment it was concluded that: the introduction of manganese dioxide (3 percent by weight of the cement) into lightweight concrete based on local raw materials increases the materials' resistance to oxalate, ammonia, urea, and oxalic, acetic and lactic acid environments.

An installation for producing gypsum wall blocks 410x215x190 mm in size (for the construction of rural housing and operating facilities), made from stucco from the Novomoskovsk Gypsum Combine, blast-furnace slag from the heap of the Kosogorskiy Metallurgical Plant, and granulated blast-furnace slag from the Tulachermiet NPO [Tula Ferrous-Metallurgy Science and Production Association], was designed in accordance with a joint development by specialists of the Novomoskovsk Brick Plant, BTISM imeni I. A. Grishmanov, and the Tula Polytechnic Institute and put into operation at the Novomoskovsk Brick Plant.

Ground granulated blast-furnace slag (5-7 percent of the weight of the cementing substance) raises the blocks' strength to 7.5-9 MPa. In order to increase their fire resistance, a part of the blast-furnace slag from the heap is replaced by natural rock gypsum. But the strength of the product was reduced. A composition with additive of siliceous- calcareous silicate slurry (an estimated 2-4 percent of the dry matter) from installations that purify the effluent of PAV [surfactant] production was proposed. The gypsum wall blocks acquired higher fire resistance and good strength—7 MPa.

A new modifier for getting better water-retention properties and better moldability during extrusion processing was proposed by VNIIstrom imeni P. P. Budnikov. The modifier is a salt (sodium, calcium, ammonia and soon) of a copolymer of methacrylic acid and methyl methacrylate (a salt of the copolymer M-14). Unlike

methylcellulose, the additive provides for stable shaping properties and good quality of extrusion products throughout practically the whole range of working temperatures since, upon heating a solution of the salt of copolymer M-14 to 95 degrees C., it does not gelatinize. In extrusion technology, gypsum binders of various types, including gypsum-puzzolan cement and phosphogypsum, can be used.

Low-absorption thermal insulating concrete based on expanded vermiculite was obtained by Giprotsement [All-Union State Design and Scientific- Research Institute for the Cement Industry]. It was possible to reduce water-absorption of the mix by processing it with the water-repelling liquid GKZh-94, in the form of a water emulsion, which is introduced in an amount of 5 to 30 percent (by weight), with later heat treatment for strengthening the water-repellant layer.

The results of theoretical and experimental research on optimizing the processes of grinding, mixing and vibration-processing of building materials, an intensification of industrial processes in the production of cement, asbestos cement, keramzit and other products, and a rise in the effectiveness and operating reliability of the equipment used, were presented to the section, "Equipment and Mechanisms for Producing Building Materials."

A design for vibration-type releasing installations for unloading from hoppers materials that do not flow well (clays and wet sand with impurities) which was developed by the Ust-Kamenogorsk Construction and Road-Building Institutes was regarded as most interesting. The installation's operating principle consisted in the use of guided vibration effects on the material in order to shift it in the direction of release.

VNIInerud [All-Union Scientific-Research Institute for Nonmetallic Materials and Hydraulic Mechanization] introduced a new instrument for analyzing the dispersed state of powders and powderlike materials by the dry method. The instrument is recommended for use in branches that produce and consume cement, talc, kaolin, calcite, chalk, limestone and so on. One and a half to three minutes is required to measure the fineness of grinding over the 63-0.5 micrometer interval.

Technical progress in the building-materials industry, as in other branches, is unthinkable today without computer equipment, automated systems for controlling industrial processes, data-measuring means, and mathematical modeling of production operations. These questions were reviewed by the "Control of Complicated Technical Facilities in the Building-Materials Industry, Based on Microprocessor Equipment" section.

The problem of obtaining compositional materials with the prescribed ratio of components can be found in any production area. The Kiev Construction-Engineering Institute proposed a flexible automated system for controlling the process of preparing compositions with the



possible use of serially produced microcomputers. Such a system, which was introduced at one of the concrete-mixing centers of the Zaporozhzhel'beton PO [Production Association], has shown high effectiveness.

An analysis of the status of operations for creating microprocessor systems for controlling the electric drive of industrial robots was carried out by BTISM imeni I. A. Grishmanov.

Automation of production has brought on some problems connected with improving quality in the control of units and industrial facilities, including industrial robots. One of them is the development of variable DC and AC electric drives. Also among the industry's unsolved problems is the automation of final operations in the industrial processes for many types of production work.

Construction badly needs (during the erection of new buildings and the rebuilding and repair of existing buildings) effective, good-quality roofing and water-insulating materials. The traditional one—ruberoid on a cardboard base—does not meet operational needs. Roofing mat serves 6-8 years at most. Specialists were enabled to meet in the "Technology for Producing and Using Bituminous-Polymer Roofing and Water-Insulating Materials" section to discuss this burning question and the generation of a unified engineering policy.

The main task that faces scientists and specialists is that of raising the quality and durability of roofing materials. Its realization is seen, in particular, in modifying bitumen with polymers (synthetic rubber and rubber-containing wastes). Added to the bitumen, they improve the ruberoid's properties and enable scarce binding materials to be saved.

Some new roofing materials have been developed in the laboratories of VNIItroypolimer [All-Union Scientific-Research Institute for the Use of Polymers in Construction].

A formula and a technology for manufacturing a bitumen-based mastic modified by atactic polypropylene (less than 10 percent) with an additive of "dafus" composition up to 7 percent—a waste from the production of

ester plasticizers. The composition is used as to glue roll-type roofing to the base and for water insulation of constructional structure. The polymer component enables it to work in the temperature range of -20 degrees to +100 degrees C. Unoxidized bitumen can be used for making mastic.

Bitumen-latex emulsion material which contains various types of polymer raw materials is recommended as a mastic coating for reinforced-concrete slab, inside and outside water insulation of buildings and structures, and the repair of mastic and roll-type roofing. It can be used in all climatic zones of the country, except for region I. The coating retains its elastic properties at temperatures from -30 to +120 degrees C. The material has an advantage over 4-layer ruberoid mat: labor productivity is increased 4-fold to 5-fold, and the coating is one-third as materials intensive. The mechanization level of roofing work is much higher.

Construction sealant compound based on the thermal elastic plastic DST-30, which replaces thiokol mastic, was developed by scientists of the Voronezh Branch of the Synthetic Rubber Institute. The sealing compound does not require vulcanization. An elastic film is formed on the sealing surface after its solvent evaporates. Its physical, mechanical and operating indicators provide for reliable use of it in all the country's climatic zones, including the Far North.

In accordance with developments of the Institute of Geology and Geochemistry of Fuel-Type Mineral Resources of the Ukrainian SSR, the Lutz Ruberoid and Cardboard Plant held experimental industrial tests on the output of ruberoid in which an organomineral material—menilite shale powder—was used for the filler and dustlike grit. The ruberoid meets the standard's requirements.

A summing up of the conference results at the concluding plenary session indicated that many developments can be recommended for practical introduction.

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11409

## GOODS PRODUCTION, DISTRIBUTION

**Supply, Demand Problems in Trade Sector Noted**  
18270039 Moscow SOVETSKAYA ROSSIYA in  
Russian 2 Mar 88 p 1

[Article by Nikolay Oleynikov, candidate of economic sciences: "The Sector's Salescounter"; first paragraph is excerpt from a letter by L. Ionichev]

[Text] "In reading the newspapers, you see what disorders there are in our country with regard to supplying the population with items for which there is enhanced demand. There are not enough vacuum cleaners, washing machines, sewing machines, and other household appliances for sale. But, you know, 10-15 years ago industry was successfully satisfying the population's demands. There were not such lines waiting for household appliances, and product quality was better. Many examples could be cited, but they are well-known to everybody. And so, what is the matter here? The trouble lies in the failure of certain ministries to determine the population's needs. But without taking these needs into account, it is impossible to operate normally. And the ministries, inasmuch as they undertake to produce commodities, should make a thorough study of demand either through the network of company stores or some other method of trading in these commodities.

L. IONICHEV

Sukhinichi Kaluga Oblast."

Trade matters are now at the center of general attention, evoking the vital interest of the widest circles. Terms from commercial dictionaries have begun to appear in the speeches by the captains of our country's industry. Plants and factories, kolkhozes and sovkhoses are opening up their own stores. And soon the development of wholesale trade in producer goods and reform in price formation, along with the genuine conversion to self-financing and self-administration, will become the cornerstones of business relations among enterprises.

While the framework of the organizational structure and the economic mechanism of the entire trade-industrial complex is still being forged, we must also turn our attention to those existing possibilities which we should even now utilize in a businesslike way. What we are talking about is the company-type trade engaged in by industrial enterprises and sectors. There are now approximately 800 company stores, of which half are in the RSFSR. They belong to 11 departments. However, the USSR Ministry of Instrument Making, Automation Equipment, and Control Systems and the USSR Ministry of the Radio Industry have only 4 each, and the USSR Ministry of the Construction Materials Industry has only 3. According to data of the RSFSR State Committee for Statistics, there is not a single one in

Mordoviya, Chuvashiya, Tuva, Yakutiya, and Leningrad Oblast. Furthermore, they occupy scarcely one percent of the country's commodity turnover.

So that company-type trade may truly facilitate the development of commodity production as well as the improvement of services to the population, each sector should have a carefully worked-out program: how many, where, and what kinds of company stores it needs to have; precisely how should their operation be fine-tuned in order to obtain the necessary effect? It is frequently said that a company store is the sector's showcase. But are the commodity producers always interested in having this showcase? The machine-building complex accounts for about one-fourth of the production volume of non-food commodities (not counting items produced by light industry). However, there are very few company stores within its sectors.

Let's take, for example, the machine-tool and tool building industry. Its plants supply hardware stores with tools and accessories for do-it-yourself handymen and builders. But it is a rare customer who has not complained about the paucity of these salescounters. Commodity specialists in wholesale trade also know quite a bit about this group of items. Therefore, their orders rarely go beyond hammers, pliers, and screwdrivers. Even axes, saws, and planes cannot be bought everywhere. The industrial giants under the Ministry of the Machine-Tool and Tool Building Industry have a great capacity. They have developed quite a few new tools for various production lines. Why not show some of these new items at fairs sponsored by company stores and, as demand for them evolves, release them into the market? The only trouble is that the Ministry of the Machine-Tool and Tool Building Industry does not have such company stores, which would become genuine showcases for this sector.

Approximately four percent of the All-Union output of non-food items are accounted for by the Ministry of the Chemical Industry. We are greatly obligated to the achievements of chemical science for the expansion which has occurred in the assortment of various goods—articles made of plastics and items of household chemistry. These many thousands of small-scale items are being demonstrated in only two company stores. Is that really sufficient? The most substantial, actually a monopolistic producer of clocks and watches—the Ministry of Instrument Making, Automation Equipment, and Control Systems—does not have a single large specialized store for the company-type sales of these timepieces. But, of course, there is an entire subdivision, comprising dozens of plants, which operates in this field to satisfy the market's needs. The only trouble is that you rarely hear a good report from a customer about the quality of a new timepiece. In fact, new items are rare; their advertising is indistinct and featureless. Nor does the Ministry of Instrument Making, Automation Equipment, and Control Systems concern itself with the fate of an item once it has been sold. And what a pity that is!

How much we consumers suffer with repairs! The population now has 185 models of wrist watches alone. Each of these timepieces has about 300 parts. And so each workshop has to have thousands of parts just for repairing wrist watches. The following cheerfully optimistic indicator of the population's prosperity—for every 100 families there is an average of 533 clocks and watches—is likewise, to a considerable degree, a testimony to the great magnitude of the so-called "passive stock" of items in our everyday life.

All this comprises the costs of not knowing the market's demands, of not knowing how to trade—by ourselves or with the middle-man operation of wholesale and retail enterprises, and in contrast with the everyday municipal services. Sectorial disunity still remains to be overcome. And trade is the most powerful lever for this purpose. When everyone who produces goods (specific items, and not just featureless output for clearing accounts) undertakes to really trade, whether in wholesale or retail, then the criterion for estimating production will be demand, and it will not be abandoned.

Today we must give some thought to the following: there are company stores, but few people care about the company trademark in them; there is the same crush after items in short supply, the same goods with hidden or obvious defects, the same salesman with his back to the customer.... What is the reason for the poor development of such an important matter? I think that it lies primarily in underestimating the commercial problems of production. What is company-type trade in the broad sense of the term? It is a specific form of the mass selling of goods. Such selling of goods can be organized in state and cooperative trade, as well as within the system of an industrial. Moreover, it does not need to be in the so-called company stores. It can be structured on a foundation of lengthy, direct ties between the industrial and trade enterprises, with a precise division of receipts and outlays. The whole problem consists in seeing to it that these receipts are necessary to the specific enterprises involved and that they provide a substantial addition to their financial revenues.

And what is a company store? It is a specialized trade enterprise which belongs to a sector or an enterprise (association). It sells items which are produced by it in order to form and study demand and to fine-tune advertising. And, above all, it sells the first test batches of items for the purpose of determining future directions and the specific tasks of adapting the consumer features of items to the demands and tastes of potential customers. Such a store is the initial instrument for implementing the active assortment policy of a state enterprise (or association) and that of a sector also. But it will become an instrument performing its true purpose only when the information being received by it is taken into account in restructuring factory and plant conveyor belts in the consumers' interests.

This is not yet happening. In a formal sense, the company stores of an industry are considered as laboratories for studying and forming demand. In fact, they are becoming more and more like ordinary centers for the sale of items in short supply. Furthermore, they are also being impelled into this by the economic mechanism. Since last year company stores have been accorded the right to purchase items at wholesale fairs on a first-priority and unhindered basis. What is this leading to? For example, Krasnoyarsk has significantly increased its stocks of washing machines. However, the lion's share of them will be sold only in company stores, since the other trade enterprises are receiving only half the number of these items as compared to last year. Could it be that this is a matter of new items the customers' reactions to which must be studied? Hardly so, since everybody knows that three-fourths of our washing machines use the equipment and technology of the day before yesterday.

The proportion of goods in short supply supply and serially produced items enjoying increased demand by customers amounts to more than half of the commodity turnover of the Leningrad Elektronika store under the Ministry of the Electronics Industry. And once an item starts moving well, then perhaps the remarks by those persons coming out of a company store are not listened to. The capital's Komfort store under the USSR Ministry of the Construction Materials Industry likewise trades only in short-supply items. The producers themselves are not interested in the customers' opinions about their products. Last year the store held three exhibit-sales, but only one of them was attended by production representatives.

Such a "sales channel" provides little to either the producers of goods or their purchasers. This is all the more true inasmuch as many company stores are practically not included in an exchange of information. Plants, factories, and sectorial staffs fail to inform them about items intended for production, while wholesale centers and large state-trade stores do not provide data on the results of studying demand for the purpose of drawing up well-substantiated orders.

Is it fair to blame only the sector staffs for the shortcomings in the operation of the company stores? Above all, the enterprises and associations themselves of the industry ought to have their own trade network, taking into account the specifics of certain items for the market. The local Soviets of People's Deputies should manifest considerable interest in doing this. Nowadays this is hampered by the particular characteristics of the company stores, as well as their self-centered, restricted focusing on solving supposedly purely sectorial problems. But really this amounts to the same problem for all of us—to more rapidly saturate the market with high-quality goods and services, to ensure a balance between the population's monetary income and the retail-goods turnover, along with the production of items. This general task has a precise geographical application to the affairs and



needs of every rayon, city, oblast, and autonomous republic. On the whole, it will be carried out better, the sooner each item finds its own customer.

2384

## HOUSING, PERSONAL SERVICES

### Decline in Individual Home Builders Observed

18270040 Moscow IZVESTIYA in Russian 12 Mar 88 p 2

[18270040 Article by Yu. Rytov: "A House at One's Own Expense—Statistics and Our Commentary"]

[Text] USSR Goskomstat [the State Committee for Statistics] reports that there are 1,712,580 million square meters of housing that are personally owned by citizens in the housing fund as of 1 January 1988. This amounts to 40 percent of the country's total housing fund. Nevertheless, the volume of individual construction is diminishing from one five-year plan to the next—both for the country as a whole and for a majority of the union republics.

The report also cites the following figures. The average total living area of individual houses placed in operation during the period 1981-1985, by comparison with that of the period 1961-1965, declined in the RSFSR by a factor of 4.4; in the Belorussian SSR and the Kazakh SSR by a factor of 3.4; and in the Ukrainian SSR, the Georgian SSR, the Armenian SSR, and the Estonian SSR by a factor of 2. The scale of individual housing construction grew only in Uzbekistan, Lithuania, Tajikistan, and Turkmenia (by a factor of from 1.3 to 1.5 for the same period).

To understand and evaluate these facts it is necessary turn to the letters to the editors. Almost a third of the letters received are concerned with the housing question. Basically, in this respect, complaints are about someone passed over in housing assignments or by the local soviet. Recently, however, another concern has taken a prominent position. The people are saying that an obvious injustice now exists in the system of allocating and using housing. Some get quarters free and use them with only token remuneration. Some join cooperatives where they pay more in both building construction and maintenance costs. A third group is obliged to build their houses individually, not only investing in them money and physical labor but making an enormous effort to get the equipment and materials and to find the workers.

Does this pose a problem? Undoubtedly, it does. Of course, the capital used for the construction and upkeep of state quarters is taken out of the budget—that is, out of all our pockets. Elementary logic would seem to say that whoever undertakes to pay for expediting the resolution of his housing problem should receive preferential treatment from the state. But no such preferential treatment has been provided. It has been a long time since anyone really wanted to occupy either cooperative or

individual housing. Moreover, willingly or unwillingly we have become accustomed to a consumerist attitude towards the state. As they say, the wealth we possess must provide for us all.

The average annual amount of housing made available by the population during the last two years has grown somewhat in the country as a whole and in the union republics, with the exception of Belorussia and Lithuania. As a proportion of the general volume of housing construction, however, it has continued to decline, and now amounts to 14 percent for the country as a whole.

The most significant drop in the construction of individual housing has occurred in rural areas, where it declined by a factor of 2.4 in 1986-1987 as compared with 1961-1965, whereas the rural population altogether declined by only 11 percent.

Planned programs for the introduction of individual housing have been continually disrupted, the chief reason being the failure of the trade network to provide timber and basic building materials together with an acute shortage of local building materials. The 1987 task for the sale of local building materials to the population was fulfilled in the country as a whole only by 49 percent, in the RSFSR by 26 percent, and in Kazakhstan by 36 percent.

Where does the individual home builder turn if the trade network cannot provide him with anything? The Goskomstat report states that the population spends a considerable amount on timber and basic building materials from private sources. According to research data, expenditure for materials acquired by these means exceeded 400 million rubles in recent years.

Unfortunately, the Goskomstat report does not say more precisely where this privately provided timber and these building materials come from. However, I believe that each person can find the answer to this question for himself.

Thus it is not easy to build one's own home. Nor is it easy to repair it and maintain it. And how many other, unforeseen burdens individual home builders must sometimes bear on their shoulders!

Here is a letter from the city of Kalinin written by war and labor veterans N. Ya. Kolosov and V. I. Sudakov and librarian V. I. Shvedkova. They live in private homes in a small development of individually built housing. This development arose in a former suburb of the city during the late 1930's and 1940's as a result of the removal of individual houses from the center of the city. Now, once again, the threat of home removal hangs over a part of the residents. The Main Administration for the Kalinin Construction Industry needs space to

erect a new administration building. And where will the individual homes be located? Where will the residents go? Why, to the present outskirts, of course. You can see how simple it all is.

"The prospect of a new move frightens us," the letter states. "We are now at an age when we should thank fate for each day that we go on living. Resettlement takes the future away from us. First, to wait while the houses are moved, hanging out with relatives, and then to try to get used to new surroundings is all the more difficult and upsetting...."

There is no way that the Kalinin city soviet ispolkom can respond to this request for the present. The question comes to mind: Should one build one's own house?

The CPSU Central Committee and USSR Council of Ministers recently passed a decree entitled "Measures

for Accelerating the Development of Individual Housing Construction." It is directed at fundamentally changing attitudes towards individual housing construction and satisfying as soon as possible demands by families that want to build or renovate individual houses. Plans provide for no less than 50 square meters of total living space in individually built housing to be placed in operation in 1995. Measures are also planned for improving the organization of individual housing construction, for revoking unjustified restrictions in the allocation of land parcels, and for creating a voluntary association of individual home builders.

The individual home is indeed not a matter for the individual in possession of it. It is also public wealth. And we are all needed to build and preserve it.

12889

## ENERGY COMPLEX ORGANIZATION

### AES Accident Analysis System Described

18220039 Kiev *ENERGETIKA* 1

*ELEKTRIFIKATSIYA* in Russian No 4, Oct-Dec 87  
pp 8-11

[Article by T.M. Kot, candidate of technology, and G.I. Zuyeva, engineer, both of the Promavtomatika NPO [scientific production association in Kiev: "Expert Systems For Analyzing Emergencies at AES Power Units"]]

[Text] The development of on-line decision making systems is one of the key areas in efforts to make atomic power plants more reliable. Currently, several countries are developing such systems, including the STAR in the FRG, COSS in Japan, DASS in the US, and the RiD in Hungary [1,2].

The main purpose of on-line decision making systems is to help the operator running a power unit diagnose and forecast the progress of anomalous situations, and plan the course of action that will rectify them. Most of the current systems are in the information systems category, where diagnostics and forecasting are based primarily on cause and effect trees (diagrams), while planning is based on instructions or "situation-response" rules stored in the computer memory.

In this article, we look at a post-accident diagnostics system that is a prototype of an on-line decision making system. The system's protocol for analyzing events is identical to one that could be used in an on-line decision making system.

The purpose of the post-accident diagnostics system is to analyze emergency situations in order to identify the causes of the emergency and determine how correct the response of personnel and automatic systems was. It is employed after an accident situation has developed. Designed along expert system lines, it includes: an information model containing information on the power unit in the form of facts and operational rules; a series of procedures for processing the information model and thereby analyzing the accident; and an analog and digital Mt data array in which the values of the signals registered in the course of the accident are recorded.

The information model describes the condensate-feeder section of a power unit in a VVER-440 reactor with two 200 MW turbines. The section noted above has the following standard equipment (per turbine): a condenser; three condensate pumps (one back-up); three high pressure heaters; one deaerator; three feed pumps (one back-up); three emergency feed pumps; two auxiliary feed pumps; and three high pressure heaters.

During power unit operations, approximately 200 of the section's technical parameters are automatically controlled. Safety is provided by approximately 180 different forms of protective shielding and locking systems at various levels.

The information model is a representation of the design of the equipment and valves, as well as techniques and equipment for monitoring, controlling, and protecting the reactor when normal operations are disrupted and an unplanned drop in power unit load becomes necessary. It consists of three elements: plans; cause and effect rules; and facts. These are all shown in the table, which describes the structure of the model and gives examples of its components. The first two elements are determined by operational rules.

The plans are a set of operations that are prepared in advance and organized in chronological order and which respond to changes in the status of the valves; their purpose is to take the damaged part of the circuit out of operation and activate the back-up (if there is one.) The plans contain a description of how the automatic protection equipment and locking systems function and the instructions operational personnel will follow. The plans are a collection of rules, each of which is an individual operation performed under certain conditions and evaluated in terms of the time it takes the operation to be completed. This period of time includes valve travel time and logical exposure time (the time between the completion of the previous operation and the beginning of the next one.)

The cause and effect rules are a representation of what is known about the thermo-physical processes underway in the various sections of the working reactor. Depending on their structural organization and purpose, they may be divided into four categories, each of which is indicated by number in the table.

The rules in the first category establish the cause and effect relationship between changes in the values of the technical parameters in adjacent sections of the circuit, as well as between failure of an element and a change in the value of a technical parameter.

The rules in the second category represent the process of forecasting the actuation of automatic protection devices. These rules contain information on the relation between the values of a parameter (setting) and a specific protection device, as well as information on the time interval needed for the deviating parameter to reach the protect setting and the automatic protection equipment to commence operations. There can be various causes behind a deviation in the value of a technical parameter, while the speed with which its value increases (when it is first observed its value is equal to the value set in the alarm system) to the value at which the automatic protection equipment is activated can also vary for different reasons. The time interval is the difference



1) Имя	(2) Описание структуры модели	(3) Примеры
Планы	<p>Имя плана (7)</p> <p>1. Условная часть <math>\Rightarrow</math> Операция 1, <math>\Delta t_1</math> (8) (9)</p> <p>а. Условная часть <math>\Rightarrow</math> Операция а, <math>\Delta t_a</math> (8) (9)</p>	<p>(10) Отключение ПЭН</p> <p>1. <math>\Rightarrow</math> ИПЭНДО1 откл. <math>\Delta t_1 = 0.1</math> с (11)</p> <p>2. <math>P_{\text{в}} \text{ под ПЭН} &lt; 55 \text{ кгс/см}^2 \Rightarrow</math> (12) (13)</p> <p><math>\Rightarrow</math> ИПЭНС03 закр. (14)</p> <p>закр. (15)</p> <p><math>\Delta t_2 = \Delta t_1 + 30</math> с</p> <p>3. ИПЭНДО1 откл. <math>\Rightarrow</math> (16)</p> <p>ИПЭНДО2 откл. ИПЭНДО3 откл. (17)</p> <p><math>\Delta t_3 = \Delta t_2 + 300</math> с</p>
	<p>1. Отказ элемента i-го участка технологической схемы (18)</p> <p>Отклонение значений технологических параметров i+1 участка технологической схемы (19)</p> <p>Отклонение значений технологических параметров i-го участка технологической схемы (20)</p> <p>Условная часть (21)</p>	<p>Отказ арматуры <math>\Rightarrow</math> (22)</p> <p><math>\Rightarrow P_{\text{в}} X_1 \wedge P_{\text{в}} X_2 \wedge O X_3</math></p> <p><math>Z_1 \vee \dots \vee Z_n</math> (23)</p> <p><math>X_1, X_2</math> — трубопроводам, <math>X_3</math> — соединит. <math>Z_1 \wedge \dots \wedge Z_n</math>, <math>Z_1 \wedge \dots \wedge Z_n</math> арматура, закрыта, <math>X_3</math> — сапун за <math>X_1</math> (24) (25) (26) (27)</p>
Причинно-следственные правила	<p>2. Информация об i-ой установке защиты, <math>\Delta t_i</math> (28)</p> <p>(Условная часть) <math>\Rightarrow</math> (29)</p> <p><math>\Rightarrow</math> Имя защиты, <math>\Delta t_i + t_{\text{зам}}</math> (30)</p> <p>Имя плана (31)</p>	<p><math>G_{\text{в}} \text{ под ИПЭН} = 56 \text{ кг/с}</math>, <math>20 + 40</math> с (32)</p> <p>(ИПЭНС 06 закр. 60 с) <math>\Rightarrow</math> (33)</p> <p><math>\Rightarrow</math> ИПЭНУ 300, <math>80 + 100</math> с (34)</p> <p>Отключение ПЭН (35)</p>
	<p>3. Невыполнение основных операций плана <math>\Rightarrow</math> Невыполнение условий основных операций плана (36) (37)</p> <p>Отказ управляемого элемента технологической схемы (38)</p> <p>4. Аномальная ситуация <math>\wedge</math> Невыполнение плана <math>\Rightarrow</math> Срабатывание защиты более высокого уровня (41) (42) (43)</p> <p>Отказ элементов технологической схемы (44)</p>	<p>ИПЭНДО1 Не отключился <math>\Rightarrow</math> Отказ выключателя ИПЭНДО1 (39) (40)</p> <p><math>G_{\text{в}} \text{ под ПЭН}</math> Откл. <math>\Rightarrow</math> Защита 1. Разрыв трубы (45)</p> <p><math>P_{\text{в}} \text{ под ПЭН}</math> Откл. <math>\Rightarrow</math> Защита 2. Попадание воды в котел (46)</p> <p><math>N_{\text{в}}</math> Откл. <math>\Rightarrow</math> Защита 3. Повышение уровня воды в котле (47)</p> <p>(48) (49)</p>
Факты	<p>5. Имя понятия (отношение А, понятие В), ..., (отношение С, понятие Д). (50)</p>	<p>Трубопровод на входе ПЭН (содержит запорную задвижку ИПЭНС03), ... (следует за ПЭН) (51)</p>

Key. 1. Name 2. Description of structure of model 3. Examples 4. Plans 5. Cause and effect rules 6. Facts 7. Name of plan 8. Standard module 9. Operation 10. PEN Shut-off 11. IPEND01 shut-off 12.  $P_{\text{в}} \text{ под ПЭН}$  13. 55 kg/cm 14. IPENS03 closes 15. IPENS04 closes 16. BPEND01 shut-off 17. IPEND02 shut-off, IPEND03 shut-off 18. Failure of element of i section of circuit 19. Deviation of values of technical parameters in i+1 section of circuit 20. Deviation of values of technical parameters in i section of circuit 21. Standard module 22. Valve failure 23. Pipes 24. Contains 25. Valve 26. Closed 27. Follows 28. Information on i setting of protective device 29. (Standard module) 30. Name of Protective device 31. Name of plan 32.  $G_{\text{в}} \text{ под ПЭН} = 56 \text{ kg/c}$  33. (IPENS 06 closed, 60 c) 34. IPENU 300, 80/100 c. 35. PEN shut off. 36. Main operations of plan not executed 37. Requirements for execution of main operations of plan not present 38. Failure of control unit in circuit 39. IPEND01 not shut off 40. Failure of IPEND01 switch 41. Anomalous situation 42. Plan not executed 43. Higher level protective device activated 44. Failure of parts of circuit 45.  $G_{\text{в}} \text{ под ПЭН}$   $P_{\text{в}} \text{ под ПЭН}$   $N_{\text{в}}$  46. IPEN shut-off not executed 47. Start-up generator protected as feedwater level drops 48. Pipe ruptures from IPEN pressure 49. IPEN breaks down 50. Name of concept (relation A, concept B), ..., (relation C, concept D). 51. Pipe under PEN pressure (contains IPENS03 isolating valve), ..., (follows PEN)

between the minimum and maximum time needed for the value of the technical parameter to increase to the value which activates the protection device

The rules in the third category show the possible causes behind a failure of the basic operations of the plan to be performed. Such causes include improper conditions for performing the operation and/or failure of the control element in the circuit.

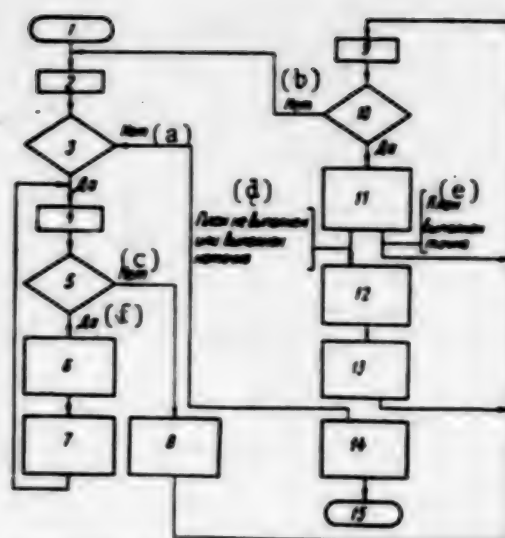
The rules in the fourth category represent the effects of a failure to perform the basic operations of the plan. The effects embody information on changes in the value of technical parameters both in the observed section of the circuit and in adjacent, operationally related sections of the circuit. They also represent information on probable failures of functional elements and the possible need to activate higher level protection devices. The categories of cause and effect rules we have enumerated here may be generalized to varying degrees. For example, in the first category of rules we can generalize classes of concepts (pumps, heat exchangers, pipes, etc.), which are described by variables in the rules (see table). For the second through the fourth categories, we can generalize equipment that belongs to a single class of concepts (PEN [not further identified], PVD [not further identified], pressure conduits, etc.) Higher level generalization will help make the model more widely applicable and reduce the effort needed to adapt it to different types of power units.

Facts represent the third component of the information system. Facts are used to describe the design characteristics of the parts of the operational circuit and the structure of the individual sections of the circuit. The facts are presented as a set of concepts and relations connecting these concepts. They form hierarchical structures in which general and specific elements can be identified.

As we have already noted, the information model we have described and the Mt data arrays are used to analyze accidents.

A diagram of the generalized emergency analysis process is shown above. During the analysis, the Mt arrays (from a time t at which they are recorded) are studied sequentially. Within each array, analog Amt signals are processed first, and discrete Dmt signals second.

Certain of the analog signals are selected in sequential order when there is a need to determine the cause behind their deviation from a norm and forecast future trends. The system does not determine this cause nor formulate a forecast for "predictable" analog signals, whose value at a moment t matches that of a predicted trend. The term predictable refers to signals that earlier stages of the analysis have determined tend to change over a time period  $(t-n)-(t+n)$ . All other categories of Ai analog signals undergo diagnostics and forecasting.



Структурная схема обобщенной процедуры разбора аварийных ситуаций:

1 — начало; 2 —  $t = t+1$ ; 3 —  $M_t \in M$ ?; 4 —  $t = t+1$ ; 5 —  $A_i \in A_{Mj}$ ?; 6 — диагностирование ситуации  $A_i$ ; 7 — прогнозирование ситуации  $A_i$ ; 8 — анализ  $D_{Mj}$ ; 9 —  $j = j+1$ ; 10 —  $P_j \in P_{Mj}$ ?; 11 — проверка выполнения плана  $P_j$ ; 12 — диагностирование ситуации; 13 — прогнозирование ситуации; 14 — формирование заключений; 15 — конец.

KEY: Structural diagram of generalized emergency situation analyses procedure 1. Start 6.  $A_i$  situation diagnostics 7.  $A_i$  situation forecast 8.  $D_{Mj}$  analysis 11. Verify execution of  $P_j$  plan 12. Situation diagnostics 13. Situation forecast 14. Conclusions drawn 15. End a. No b. No c. No d. Plan not executed or executed with inadequate precision e. Plan executed correctly f. Yes

Regular analog signals ( $A_i$  situations) are diagnosed by a cause tree (technical situation assessment tree [3]) and through confirmation of the causes.

The structure of the tree is based on the facts and cause and effect rules in the first category; these are analyzed from effect to cause. The tree building procedure belongs to the class of procedures involving a search in a region of conditions and is described in detail in [3].

Confirming the causes involves comparing possible causes with data on the condition of the equipment and valves, as well as with forecasts obtained through processing analog signals recorded in previous moments in time. The latter entails the possibility that causes will be found in many previously predicted situations. Consequently, the system selects those causes which have been confirmed and for which no negation has been found.

The trend a particular analog signal or related signals will follow is determined during  $A_i$  situation forecasting, at which time a forecasting tree is constructed. This forecasting tree is structurally analogous to the cause tree. The same type of rules as those used in the cause tree are

used for the forecasting tree and are employed from cause to effect. The procedure for producing a forecast tree is identical to the one for a cause tree.

When constructing a forecast tree, each part of it that represents a certain situation is the subject of a search for a plan; that is, an attempt is made to predict the proper response to rectify (stabilize) a given situation. These rules are also used to identify the time interval in which the plan should be executed. If a plan is found, the forecasting process for a given branch of the tree stops, since executing the plan might change the situation. Forecasting as a whole stops when plans have been determined for all the branches of the tree.

When the forecasting has been completed, the system begins processing the next analog signal. Later, after all analog signals recorded at a moment  $t$  have been studied, the system analyzes discrete Dmt signals corresponding to that moment in time.

Work with discrete signals consists of searching for plans containing these signals. As we noted earlier, an information model's plans to respond in a certain way are represented by a list of operations. A discrete signal identifier (see table) is determined for each operation and entered in the Mt array upon completion of the operation.

After all plans have been found, they are monitored to determine if they are executed properly and with the requisite degree of precision. The set of plans Pmt is analyzed, as are plans subset Pd, whose plans were found during the processing of discrete signals, and plans subset Ptn, for which the maximum predictable time needed for implementation of the plan to begin is equal to moment  $t$ .

Pd plans are divided into two categories: predicted, which are found during processing; and non-predicted. The explanation for the existence of the second category is that not all analog signals are recorded in the Mt arrays, with the result that some responses are impossible to forecast. In addition, operators may respond incorrectly and unpredictably.

As the plans in the first category are processed, the system establishes how timely the execution of the plan and individual operations was, checks the environment in which the operations are being carried out, and verifies that all operation indicators are present.

We should note that identifiers are not only searched for in Mt arrays, but in Mt+i ( $t+i$  represents the time intervals determined in descriptions of operations) arrays as well.

When the plans in the second group are studied, the objective of the response is given further definition.

The plan is "flawed" if it is not executed in a timely manner, if the requisite degree of precision is not present, if it is improperly (no objective) executed, or is simply not carried out (plan from subset Pnt.) In the event of any of the above, the system creates hypotheses about the cause behind the flaw and its possible ramifications. The above-named diagnostics and forecasting procedures utilize a foundation of cause and effect rules to perform this function. In the first instance, rules in the third category are used, while in the second, rules in the fourth and second categories are used.

Every array uses this arrangement: diagnostics of the deviation; forecasting how the deviation will progress and predicting a response; diagnostics of "faulty" responses; forecasting how the situation will progress in a "faulty" response environment.

When all arrays have been studied, conclusions are drawn. The chain of events leading to the emergency is studied, and the operator is given lists of the causes of the events (equipment and/or valve failures) and his "faulty" responses, together with the reasons for them.

The post-accident diagnostics system we examined here is being developed as a component part of ASTUP. The system's hardware is an SM 1420; it is written in PROLOG.

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#### FUELS

##### Azerbaijan Oil Production Figures Cited

Extraction, January-November 1987  
18220063a Baku VYSHKA in Russian 8 Dec 87 p 1

[Table on oil, gas extraction, January-November 1987]

[Text] Data of the State Statistical Committee, Azerbaijan SSR, on fulfillment of the plans for oil and gas



extraction in January-November 1987 for the Azneft Association and the Kasporneftegazprom All-Union Production Association.

		In % of the Plan			
		November		January-November	
		oil extraction	gas extraction	oil extraction	gas extraction
Azneft Association		94.3	107.2	96.1	107.6
NGDU Leninneft	(chief Com. Ya. Shirinov, sect'y of party org. Com. A. Guseynov)	89.3	100.1	94.0	101.4
NGDU imeni 26 Baku Commissars	(Com. K. Kerimov)	100.1	114.4	100.3	117.9
NGDU Kirovneft	(coms. T. Mamedov, I. Ibragimov)	100.0	102.1	100.0	101.8
NGDU Azizbekovneft	(Com. T. Gasanov)	95.5	117.6	96.4	109.8
NGDU Siazanneft	(coms. R. Mamedov, M. Bekdamirov)	104.6	103.0	98.2	102.0
NGDU Shirvanneft	(Com. K. Poladov)	87.4	100.6	91.4	102.8
NGDU Salyanyneft	(coms. P. Guseynov, A. Isayev)	100.1	107.4	100.0	107.8
Kasporneftegazprom All-Union Production Association		104.1	102.4	102.2	103.6
PO imeni 22d CPSU Congress	(coms. S. Ibragimov, G. Aliyev)	103.2	100.0	99.4	100.0
NGDU Artemneftegaz	(coms. V. Khalilov, T. Azizov)	100.0	102.0	101.0	103.1
NGDU imeni Serabrovskiy	(coms. R. Kurbanov, Sh. Akhundov)	103.6	103.1	103.3	103.3
NGDU imeni N. Narimanov	(coms. G. Gumbatov, E. Mamedov)	100.2	100.5	100.3	105.3
NGDU Bulla-more imeni 50-letiya SSSR	(acting coms. M. Mamedov, A. Nadzhafov)	149.5	101.7	169.9	103.7
Total for Associations		101.5	102.7	100.5	103.7

**Extraction, January-December 1987**  
18220063a Baku VYSHKA 9 Jan 87 p 1

[Table on oil, gas extraction, January-December 1987]

[Text] Data of the State Statistical Committee, Azerbaijan SSR, on fulfillment of the plans for oil and gas extraction in January-December 1987 for the Azneft Association and the Kasporneftegazprom All-Union Production Association.

		In % of the Plan			
		December		1987	
		oil extraction	gas extraction	oil extraction	gas extraction
<b>Azneft Association</b>		92.2	101.4	95.8	107.1
NGDU Leninneft	(chief Com. Ya. Shirinov, sect'y of party org. Com. A. Guseynov)	80.2	101.1	92.8	101.4
NGDU imeni 26 Baku Commissars	(coms. K. Kerimov, R. Mamedov)	100.1	119.4	100.3	118.0
NGDU Kironneft	(coms. T. Mamedov, I. Ibragimov)	100.0	102.4	100.0	101.9
NGDU Azizbekovneft	(coms. T. Gasanov, R. Ragimov)	93.5	104.4	96.1	109.3
NGDU Siyazanneft	(coms. R. Mamedov, S. Akhmedov)	119.3	103.9	100.0	102.2
NGDU Shirvanneft	(coms. K. Poladov, A. Gasanov)	84.5	74.2	90.8	100.4
NGDU Salyanyneft	(coms. F. Guseynov, A. Isayev)	100.1	106.0	100.0	107.6
<b>Kasporneftegazprom All-Union Production Association</b>		104.7	101.6	102.4	103.4
PO imeni 22d CPSU Congress	(coms. S. Ibragimov, K. Aliyev)	106.0	100.0	100.0	100.0
NGDU Artemneftegaz	(coms. V. Khalilov, T. Azizov)	100.00	104.4	100.9	103.2
NGDU imeni Serebrovskiy	(coms. R. Kurbanov, Sh. Akhundov)	103.5	102.7	103.3	103.2
NGDU imeni N. Narimanov	(coms. G. Gumbatov, E. Mamedov)	100.0	100.9	112.9	104.0
<b>Total for Associations</b>		101.3	111.3	100.5	103.6

Drilling, January-November 1987  
18220063a Baku VYSHKA in Russian 9 Dec 87 p 2

drilling in January-November 1987 for the Azneft Association and the Kaspomorntegazprom All-Union Production Association.

[Table on oil, gas drilling, January-November 1987]

[Text] Data of the State Statistical Committee, Azerbaijan SSR, on fulfillment of the plans for oil and gas

		In % of the Plan			
		November		January-November	
		total drilling	including prospecting	total drilling	including prospecting
Azneft Association		87.8	45.0	101.1	69.9
Apsheronskoye UBR	(Chief Com. A. Khasmamedov, Sect'y of Party org. Com. M. Mamedov)	102.9	54.2	103.6	121.1
Siazanskoye UBR	(coms. A. Gadzhiyev, A. Mamedov)	50.5	66.9	80.6	62.0
Ali-Bayramlinskoye UBR	(coms. E. Mukhtarov, N. Ismaylov)	115.7	51.6	108.9	56.1
Prikurinskoye UBR	(acting, Com. Yu. Makhtiyev, Com. T. Karimov)	45.2	37.1	78.3	71.9
Kaspomorntegazprom All-Union Production Association		100.1	82.6	102.3	98.7
MUBR Neftyanyye Kamni	(Chief Com. O. Abasov, Sect'y of Party org. Com. K. Dadashev)	100.2	--	96.7	--
MUBR Peschaninskoye	(coms. Sh. Mekhtiyev, A. Zanin)	101.5	12.7	113.7	127.0
MUBR Sengachalskoye	(coms. S. Magerramov, B. Gadzhiyev)	120.0	--	110.6	--
MUBR Primorskoye	(coms. A. Ismailov, Z. Aliyev)	117.6	180.0	103.9	165.2
MUBR Bukhta Ilyicha	(coms. A. Gasymov, I. Guseynov)	102.5	47.9	115.8	149.7
MUBR with STS	(coms. Sh. Bakirov, A. Muradverdiyev)	25.8	25.8	61.9	61.9
MUBR Bulla	(coms. A. Kaumov, G. Gunbetov)	122.1	122.1	116.7	118.4
Total for Associations		93.0	61.3	101.6	82.5



Drilling, January-December 1987  
18220063a Baku VYSHKA in Russian 10 Jan 87 p 1

drilling in January-December 1987 for the Azneft Association and the Kaspomorneftegazprom All-Union Production Association.

[Table on oil, gas drilling, January-December 1987]

[Text] Data of the State Statistical Committee, Azerbaijan SSR, on fulfillment of the plans for oil and gas

		In % of the Plan			
		December		January-December	
		total drilling	including prospecting	total drilling	including prospecting
Azneft Association		73.5	63.6	98.1	69.2
Apscheronskoye UBR	(Chief Com. A. Khasnamedov, Sect'y of Party org. Com. M. Mamedov)	71.9	4.7	101.1	109.4
Siazanskoye UBR	(cons. A. Gadzhiyev, A. Mamedov)	59.6	150.9	78.9	67.3
Ali-Bayramlinskoye UBR	(cons. E. Mukhtarov, N. Ismaylov)	105.5	148.8	108.6	65.9
Prikurinskoye UBR	(acting, Com. Yu. Makhtiyev)	33.9	29.9	73.8	67.4
Kaspomorneftegazprom All-Union Production Association		86.4	75.1	100.9	96.6
MUBR Neftyanyye Kamni	(Chief Com. O. Abasov, Sect'y of Party org. Com. K. Dadashev)	140.0	—	100.1	—
MUBR Peschaninskoye	(cons. Sh. Mekhtiyev, A. Zanin)	52.5	150.0	108.5	128.0
MUBR Sengachalskoye	(cons. S. Magerramov, B. Gadzhiyev)	74.2	—	107.8	—
MUBR Primorskoye	(cons. A. Ismailov, Z. Aliyev)	105.2	114.5	104.0	160.8
MUBR Bukhta Ilyicha	(cons. A. Gasymov, I. Guseynov)	97.5	42.4	113.9	121.1
MUBR with STS	(cons. Sh. Bakirov, A. Muradverdiyev)	37.0	37.0	59.3	59.3
MUBR Bulla	(cons. A. Kaumov, E. Gumbetov)	86.0	105.4	114.1	117.4
Total for Associations		78.9	68.3	99.7	81.2

**Extraction, January 1988**

18220063a Baku VYSHKA in Russian 9 Feb 88 p 1

[Table on oil, gas extraction, January 1988]

[Text] Data of the State Statistical Committee, Azerbaijan SSR, on fulfillment of the plans for oil and gas extraction in January 1988 for the Azneft Association and the Kasporneftegazprom All-Union Production Association.

		In % of the Plan	
		January 1988	
		oil extraction	gas extraction
Azneft Association		97.4	101.4
NGDU Leninneft	(Chief Com. Ya. Shirinov, Sect'y of Party org. Com. A. Guseynov)	100.0	102.1
NGDU imeni 26 Baku Commissars	(coms. K. Kerimov, R. Mamedov)	100.2	105.2
NGDU Kironeft	(coms. T. Mamedov, I. Ibragimov)	94.6	104.8
NGDU Azizbekovneft	(coms. T. Gasanov, R. Ragimov)	100.0	100.0
NGDU Siazanneft	(coms. R. Mamedov, S. Akhmedov)	100.2	100.2
NGDU Shirvanneft	(coms. K. Poladov, A. Gasanov)	91.3	89.5
NGDU Salyanyneft	(coms. F. Guseynov, A. Isayev)	100.1	107.1
Kasporneftegazprom All-Union Production Association		102.3	103.2
PO imeni 22d CPSU Congress	(coms. S. Ibragimov, K. Aliyev)	102.4	100.0
NGDU Artenneftegaz	(coms. V. Khalilov, T. Azizov)	100.0	108.0
NGDU imeni Serebrovskiy	(coms. R. Kurbanov, Sh. Akhundov)	103.3	105.6
NGDU imeni N. Narimanov	(coms. G. Gumbatov, E. Mamedov)	100.7	100.4
Total for Associations		101.1	103.2

**Drilling, January 1988**

18220063b Baku BAKINSKIY RABOCHIY in Russian  
7 Feb 88 p 2

[Table on oil, gas drilling, January 1988]

[Text] Data of the State Statistical Committee, Azerbaijan SSR, on fulfillment of the plans for oil and gas drilling in January 1988 for the Azneft Association and the Kasporneftegazprom All-Union Production Association.

		In % of the Plan	
		January	
		total drilling	including prospecting
Azneft Association		100.2	117.4
Apsheronskoye UBR	(Chief Com. A. Khasmamedov, Sect'y of Party org. Com. M. Mamedov)	104.8	50.0
Siazanskoye UBR	(cons. A. Gadzhiyev, A. Mamedov)	53.0	44.3
Ali-Bayramlinskoye UBR	(cons. E. Mukhtarov, N. Ismaylov)	107.2	185.6
Prikurinskoye UBR	(acting, Com. Yu. Makhtiyev)	102.7	118.1
Kasporneftegazprom All-Union Production Association		110.3	124.8
MUBR Neftyanyye Kamni	(Chief Com. O. Abasov, Sect'y of Party org. Com. K. Dadashev)	100.9	181.7
MUBR Peschanunskoye	(cons. Sh. Mekhtiyev, A. Zanin)	100.5	180.8
MUBR Sengachalskoye	(cons. S. Magarramov, B. Gadzhiyev)	119.3	—
MUBR Primorskoye	(cons. A. Ismailov, Z. Aliyev)	101.5	65.3
MUBR Bukhta Ilyicha	(cons. A. Gasymov, I. Guseynov)	121.4	111.0
MUBR with STS	(cons. Sh. Bakirov, A. Muradverdiyev)	114.7	114.7
MUBR Bulla	(cons. A. Kaumov, E. Gumbetov)	115.0	140.5
Total for Associations		102.5	111.3



**New Equipment Developed for Oil Workers**  
*18220015a Baku VYSHKA in Russian 26 Sep 87 p 1*

[Article by V. Alekseyev: "For the Country's Oil Workers"]

[Text] The collective of the Azerbaijan Institute of Petroleum Machine Building [AzINmash] is doing over 80 percent of the work this year on the unified five-year plan of the Nefteoidacha [Petroleum Recovery] Intersector Scientific and Technical Complex aimed at creating equipment for the assimilation and exploitation of the oil and gas complexes of West Siberia, West Kazakhstan, the Caspian Depression, Astrakhan and for the conditions of the continental shelf and other regions of the country.

Aside from creating new types of equipment, considerable work has been done to modernize equipment, raise its technical level and reliability and reduce metals consumption by perfecting designs, incorporating wear-resistant coatings and using new methods of design.

The increased-capacity TVE-10-4310 pipe carrier and the MZ-4310-SK lubricants pumper for lubricating pumping jacks with increased productivity and capacity for pure and processed lubricants have been created and assimilated into series production for servicing wells.

Acceptance testing is underway of the LSG-10A installation for well testing on a KamAZ-4310 chassis, which will replace the LSG-131 installation this year. At the request of the oil workers of West Siberia and the North, the equipment has been mounted in an insulated and heated body.

Work on the creation of a UPA-32 lift installation with a comprehensive mechanization system whose incorporation will permit a 30-percent reduction in well repair times has been completed.

A lift installation on an all-terrain T-130G tractor has been completed this year, and series production is being prepared.

The institute's collective was the first in the country to create equipment complexes with lift capacities of 50 and 125 tons for executing lifting operations during the well-repair process under pressure without killing it, which will ensure a halving of the duration of well maintenance.

With the participation of specialists from the institute, in conjunction with oil workers of West Siberia from the Surgutneftegaz [Surgut Oil and Gas] and Nizhnevartovskneftegaz [Nizhnevartovsk Oil and Gas] associations, measures were developed and are currently being realized to raise the technical level and quality of a large range of oilfield equipment.

Standard time periods for creation cycles have been developed by the institute that envisage an acceleration of two to three times for the purpose of reducing the time periods for the creation of new oilfield equipment.

In order to improve inventor's supervision of the quality of manufacture of equipment according to AzINmash developments, an inventor's supervision team has been created at the institute. The work done by AzINmash on creating new-generation equipment with high indicators of reliability and productivity and improving the series-produced equipment has been called upon to resolve the task of equipping the oil and gas industry with equipment that corresponds to world standards.

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**AzSSR Oil-Drilling Data for Aug and Jan-Aug 87**  
*18220015b Baku VYSHKA in Russian 9 Sep 87 p 2*

[Table of oil-drilling data for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and Kaspomorneftegazprom [Caspian Sea Maritime Oil and Gas Fields] VPO [All-Union Production Association]]

[Text]

AzSSR Goskometat [State Committee for Statistics] Data on the Fulfillment of Drilling Plans for January-August 1987 for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and the Kaspomorneftegazprom [Caspian Sea Maritime Oil and Gas Industry] VPO [All-Union Production Association] %

As a percent of plan

	August		January-August	
	Total footage	In thou. hrs. of exploratory	Total footage	In thou. hrs. of exploratory
Azneft Association	97.2	80.7	104.9	73.2
Apscheron UBR (Chief A. Khasmamedov, party organization secretary M. Mamedov)	82.8	137.4	103.9	147.2

AzSSR Goskomstat [State Committee for Statistics] Data on the Fulfillment of Drilling Plans for January-August 1987 for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and the Kaspomornerftegazprom [Caspian Sea Maritime Oil and Gas Industry] VPO [All-Union Production Association] %  
As a percent of plan

	August		January-August	
	Total footage	In thou. hrs. of exploratory	Total footage	In thou. hrs. of exploratory
Siazan UBR (A. Gadzhiyev, A. Mamedov)	100.9	117.9	93.6	70.1
Ali-Beyramly UBR (E. Mukhtarov, N. Ismaylov)	106.9	35.8	111.1	52.7
Prikurinskoye UBR (Yu. Mekhtiyev (acting), T. Kerimov)	77.4	81.9	80.5	76.0
Kaspomornerftegazprom VPO	102.5	100.3	101.2	97.9
Neftyanyye Kamai MUBR (Chief O. Abasov, party organization secretary K. Dadashov)	118.0	—	90.2	—
Pechnaninskoye MUBR (Sh. Mekhtiyev, A. Zinin)	114.2	170.0	116.2	145.9
Sengachaly MUBR (S. Magerramov, B. Gadzhiyev)	131.2	—	108.8	—
Primorsk MUBR (A. Ismaylov, E. Aliyev)	104.5	216.8	105.8	169.1
Bulla MUBR (A. Kasimov, E. Gumbetov)	104.3	117.7	111.0	111.1
Bukhta Ilcha MUBR (A. Gasimov, I. Guseynov)	117.4	417.5	118.2	199.5
MUBR with STS (Ch. Safarov, A. Muradverdiyev)	48.2	48.2	57.0	57.0
Total for the associations	99.3	89.1	103.4	84.2

Abbreviations: UBR—Drilling Operations Administration; MUBR—Maritime Drilling Operations Administration; STS—special technical services

**AzSSR Oil-Production Data for Sep and Jan-Sep 87**  
18220015c Baku VYSHKA in Russian 10 Oct 87 p 1

[Table of oil-production data for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and Kasporneftegazprom [Caspian Sea Maritime Oil and Gas Fields] VPO [All-Union Production Association]]

[Text]

AzSSR Gosstat [State Committee for Statistics] Data on the Fulfillment of Plans for Oil and Gas Production for January-September 1987 for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and the Kasporneftegazprom [Caspian Sea Maritime Oil and Gas Industry] VPO [All-Union Production Association] %  
As a percent of plan

	September		January-September	
	Oil production	Gas production	Oil production	Gas production
Azneft Association	93.3	105.7	96.4	107.4
Leninpet NGDU (Chief Ya. Shirinov, party organization secretary A. Guseynov)	94.1	101.3	94.8	101.3
NGDU imeni 26 Baku Commissars (K. Kerimov)	100.4	111.4	100.3	119.0
Kirovpet NGDU (T. Mamedov, I. Ibragimov)	100.1	101.9	100.0	101.8
Azizbekovpet NGDU (T. Gasanov)	95.5	112.7	96.6	108.4
Siazanpet NGDU (R. Mamedov, M. Bekdamirov)	100.0	103.6	97.3	101.6
Shirvanpet NGDU (K. Poladov (acting))	80.8	104.0	92.2	102.8
Salyanpet NGDU (F. Guseynov, A. Isayev)	100.1	103.2	100.0	107.3
Kasporneftegazprom VPO	105.8	103.4	101.8	103.7
PO imeni 22nd CPSU Congress (S. Ibragimov, G. Aliyev)	104.1	100.0	98.7	100.0
Artemneftegaz NGDU (B. Khalilov, T. Azizov)	100.0	102.0	101.2	103.3
NGDU imeni Serebrovskiy (R. Kurbanov, Sh. Akhundov)	105.2	102.2	103.3	103.2
NGDU imeni N. Narimanov (G. Gumbatov, E. Mamedov)	100.2	104.7	100.3	106.1
Bulla-More NGDU imeni 50th Anniversary of the USSR (M. Mamedov (acting), A. Nadzhafov)	202.8	106.0	170.7	103.8
Total for the associations	102.4	103.5	100.3	103.8

Abbreviations: NGDU—Oil and Gas Production Administration; PO—Production Association.



**AzSSR Oil-Production Data for Aug and Jan-Aug 87**

18220015d Baku VYSHKA in Russian 8 Sep 87 p 3

[Table of oil-production data for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and Kasporneftegazprom [Caspian Sea Maritime Oil and Gas Fields] VPO [All-Union Production Association]]

[Text]

AzSSR TsSU [Central Statistical Administration] Data on the Fulfillment of Plans for Oil and Gas Production for January-August 1987 for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and the Kasporneftegazprom [Caspian Sea Maritime Oil and Gas Industry] VPO [All-Union Production Association] %

As a percent of plan

	August		January-August	
	Oil production	Gas production	Oil production	Gas production
Azneft Association	95.7	106.3	96.8	107.6
Leninft NGDU (Chief Ya. Shirinov, party organization secretary A. Makhmudov)	94.0	105.2	95.0	101.3
NGDU imeni 26 Baku Commissars (K. Kerimov)	100.2	115.8	100.3	119.9
Kirovft NGDU (T. Mamedov, I. Ibragimov)	100.0	100.8	100.0	101.8
Azizbekovft NGDU (T. Gasanov)	93.5	118.1	96.7	107.9
Siazanft NGDU (R. Mamedov, M. Bekdamirov)	100.0	101.1	97.0	101.3
Shirvanft NGDU (K. Poladov (acting))	91.2	103.6	93.6	102.6
Salyanyft NGDU (F. Guseynov, A. Isayev)	100.0	101.2	100.0	107.8
Kasporneftegazprom VPO	106.3	103.8	101.2	103.7
PO imeni 22nd CPSU Congress (S. Ibragimov, G. Aliyev)	104.1	100.0	98.0	100.0
Artemneftegaz NGDU (B. Khalilov, T. Azizov)	100.0	101.9	101.4	103.5
NGDU imeni Serebrovskiy (R. Kurbanov, Sh. Akhundov)	103.2	103.3	103.1	103.4
NGDU imeni N. Narimanov (G. Gumbatov, E. Mamedov)	100.5	103.8	100.3	106.3
Bulla-More NGDU imeni 50th Anniversary of the USSR (M. Mamedov (acting), A. Nadzhafov)	2 times	105.9	1.7 times	103.6
Total for the associations	103.4	103.9	100.0	103.9

Abbreviations: NGDU—Oil and Gas Production Administration; PO—Production Association.

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**AzSSR Oil-Drilling Data for Sep and Jan-Sep 87**  
*18220015e Baku VYSHKA in Russian 11 Oct 87 p 2*

[Table of oil-drilling data for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and Kasporneftegazprom [Caspian Sea Maritime Oil and Gas Fields] VPO [All-Union Production Association]]

[Text]

AzSSR Goskumstat [State Committee for Statistics] Data on the Fulfillment of Drilling Plans for January-September 1987 for the Azneft [State Association of the Azerbaijan Petroleum Industry] Association and the Kasporneftegazprom [Caspian Sea Maritime Oil and Gas Industry] VPO [All-Union Production Association] %  
As a percent of plan

	September		January-September	
	Total footage	In thou. hrs. of exploratory	Total footage	In thou. hrs. of exploratory
Azneft Association	100.1	89.4	104.3	74.9
Apscheron UBR (Chief A. Khasmamedov, party organization secretary M. Mamedov)	103.6	149.3	103.9	147.6
Siazan UBR (A. Gadzhiyev, A. Mamedov)	39.1	10.1	87.9	62.3
Ali-Bayramly UBR (E. Mukhtarov, N. Ismaylov)	101.5	76.8	110.0	55.2
Prikurinskoye UBR (Yu. Mekhtiyev (acting), T. Kerimov)	105.4	103.9	82.9	78.5
Kasporneftegazprom VPO	103.6	100.1	101.5	98.2
Neftyanyye Kamni MUBR (Chief O. Abasov, party organization secretary K. Dadashev)	117.2	—	93.2	—
Peschaninskoye MUBR (Sh. Mekhtiyev, A. Zinin)	119.9	63.5	116.6	140.4
Sangachaly MUBR (S. Magerramov, B. Gadzhiyev)	101.6	—	108.2	—
Primorsk MUBR (A. Ismaylov, E. Aliyev)	102.6	171.6	105.4	169.3
Bulla MUBR (A. Kasumov, E. Gumbatov)	108.8	119.5	110.8	112.0
Bukhta Ilcha MUBR (A. Gasymov, I. Guseynov)	125.4	229.0	119.1	204.0
MUBR with STS (O. Selimkhanov (acting), A. Muradverdiyev)	106.9	100.9	61.5	61.5
Total for the associations	101.6	94.3	103.1	85.3

Abbreviations: UBR—Drilling Operations Administration; MUBR—Maritime Drilling Operations Administration; STS—special technical services

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## PIPELINE CONSTRUCTION, OPERATION

### Manual, Mechanized Labor In Pipeline Construction Studied

18220005a Moscow STROITELSTVO

TRUBOPROVODOV in Russian No 9, Sep 87 pp 15-18

[Article by N. Z. Rubinov, VNIIST (All-Union Scientific-Research Institute for Pipeline Construction) and L. D. Shor, VNIIPKtekhorgneftegazstroy (All-Union Scientific Research and Planning Design Institute for the Technical Organization of Oil and Gas Construction), under "Mechanization of Operations" rubric: "Trends in Changing Manual and Mechanized Labor Inputs in Line Construction"]

[Text] An analysis of reports concerning construction of linear portions of main pipelines during 1965-1985 shows a 2-2.5-fold increase in the growth rates for the amount of construction and installation work completed in the last 15-20 years over growth rates in the number of workers. This has caused a reduction in the number of workers per unit of completed construction and installation work and an substantial attendant increase in output per worker.

More than 30 percent of the increase in the volume of construction and installation work carried out in erecting the line section of pipelines stemmed from increased labor productivity levels. Calculated per R1 million of completed work, there were reductions in numbers of production workers from all the basic trades for workers involved in laying oil and gas mains.

The relatively slight increase in the number of workers, compared to the increase in volumes of pipeline construction, is a result of the widespread introduction of scientific and technical advances during the period being examined. Construction organizations were equipped with more powerful machines and mechanisms, as well

as transport vehicles. The range of construction equipment used was expanded, improvements were made in the production methods and organization of many types of jobs and new progressive construction materials, designs and parts were introduced. Some of the jobs began to be carried out in plant-based stationary set-ups.

TsSU [Central Statistical Administration] materials on the workers' occupational structure were used as the basis in the study of labor inputs in linear pipeline construction. These censuses are taken on a regular basis—once every 3-4 years on the same day of the year. The most recent census was taken in 1985. In compliance with TsSU directives and with Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises], two types of censuses were taken, with consideration given to the specific nature of this type of work: one census dealt with construction subdivisions involved in general construction work and the other with organizations actually laying pipelines. The latter census is divided into workers who build pump and compressor stations and those involved in linear pipeline construction.

The censuses encompass all operating construction organizations. Each reflects actual numbers of workers as of the 1st of August of the census year. Workers are divided into five job-related groups. The first group consists of those who use automatic and automated machines and devices to perform their jobs; those using machines, machine tools, mechanisms and apparatuses make up the second group; the third group consists of those who perform manual labor around machines and mechanisms and those doing other types of manual labor make up the fourth group; those who perform manual labor in the repair of machines, mechanisms and apparatuses comprise the fifth group.

The make-up of workers in each of the above-mentioned groups involved in construction and installation jobs (SMR) and in auxiliary production (PP) related to the construction of the linear portion of main pipelines are listed in Table 1.

Table 1. Distribution of Workers Involved in SMR and in PP, by Occupation Groups in Construction of Linear Portion of Pipelines, %

Occupation groups	Year							
	1965	1969	1972	1975	1979	1982	1985*	1985**
Mechanized labor	53.5	55.3	58.0	62.1	62.3	69.7	70.0	72.0
Including:								
group I	—	—	—	—	—	—	—	—
group II	53.5	55.3	58.0	62.1	62.3	69.7	70.0	72.0
Manual labor:	46.5	44.7	42.0	38.8	37.7	30.3	30.0	28.0
group III	9.9	7.1	8.8	10.3	10.1	8.3	5.7	6.1
group IV	28.6	27.6	25.9	21.6	19.3	13.7	12.8	13.3
group V	8.0	10.0	7.3	6.9	8.3	8.3	11.5	8.6

\*Taking into account construction machinery troubleshooters and gas-electric welders \*\*Not counting occupations not included in previous censuses



As Table 1 indicates, the subject period showed an uninterrupted growth trend in the volume of mechanized labor done in constructing linear main pipeline sections. It grew from 53.5 to 70 percent (i.e. by 16 percent), and not counting those occupations not included in the censuses prior to 1982, it increased to 72 percent. There was particularly notable growth during 1979-1985. The 0.6 percent increase in mechanized labor inputs during the entire period from 1965 to 1979 shows an average increase of 1.3 percent for the last 6 years, or 1.6 percent if the new occupations included in the 1985 census are not counted. Accordingly, overall manual labor inputs over 20 years has diminished by 16.5-18.5 percent. According to the 1985 census, workers with manual labor skills now account for less than one-third of the workers involved in linear pipeline construction. In 1965 the number of workers in this group amounted to somewhat less than half of all the workers involved in construction and installation work and auxiliary production.

The reduced number of workers in group IV is crucially importance. This group includes those workers involved in heavy unskilled manual labor: diggers, insulators, fellers, transport (auxiliary) workers, pipe layers and fitters and others. Compared to 1965 the share of group IV in the overall number of workers decreased by 15.3-15.8 percent. This comprises 85-93 percent of the overall reduction in the numbers of workers from all groups with occupations involving manual labor. If every fourth worker involved in linear construction of main pipelines in 1985 was a group IV manual laborer, then a worker from this group in 1985 is one of every 7 or 8 workers.

The overall regularity of the censuses during the last 20 years and particularly in the 1985 census gives grounds to believe that heavy manual labor in linear construction will soon reach minimum levels.

The number of workers doing manual labor in the 3rd group, which by and large consists of helpers for payloaders and wheel excavator operators, riggers, transport workers and workers from other trades who work with machines and mechanisms, was the lowest in the 1975 and 1979 censuses by over 10 percent. In the last 6 years,

a trend has been noticed towards a reduction in the share of this group's manual laborers. It amounted to 8.3 percent in the 1982 census and 5.7-6.1 percent in the 1985 census.

In the upcoming survey period, the share of manual laborers in group III will apparently stay at this level or will be greatly reduced, since most trenches for main pipelines will be dug by payloaders and wheel excavators whose crews, because of the technical features of these machines and the way they work, should consist of an operator and his helper.

Most of the workers with manual labor skills in group V are fitters who repair machinery and mechanisms. Other groups of fitters also belong to this group. Some growth in the number of these workers was noticed after 1972-1975. However, they failed to comprise more than 10 percent in a single survey prior to 1985.

The increase in the share of group V workers stems from the level of mechanization of various types of linear construction jobs, the overall increase in construction equipment stock, the introduction of more powerful and up-to-date machines, mechanisms and small-scale mechanization equipment. In the next 5-10 years the proportion of group V manual laborers should increase somewhat, by possibly 1.5-2.5 percent, as a result of the planned further expansion of the construction equipment fleet and planned increases in the mechanization level.

Reduced manual labor inputs in linear construction is one of the major factors associated with increased labor productivity levels. Growing scientific and technical potential has substantially reduced the number of workers per unit of the actually completed work (constructed pipelines) in terms of cost as well. According to survey data and construction and installation work volumes, the total number of personsemployed in linear pipeline construction has been reduced over a 20-year period by almost half. The data on the overall number of workers and on groups of occupational skills in mechanized and manual labor calculated per R1 million of construction and installation work are shown in Table 2 (cost of the work done in previous years has been refigured into 1984 prices).

Table 2. Number of Workers per R1 Million in Construction and Installation Work

Year	Altogether	Groups of Mechanized Labor Skills		Groups of Manual Labor Skills			
		Altogether	Including group II	Altogether	III	IV	V
1965	23.5	12.5	12.5	11.0	2.4	6.7	1.9
1969	26.7	14.8	14.8	11.9	1.8	7.4	2.7
1972	18.8	10.9	10.9	7.9	1.7	4.9	1.3
1975	16.7	10.3	10.3	6.3	1.7	3.8	1.4
1979	16.6	10.3	10.3	6.2	1.7	3.2	1.3
1982	12.0	8.4	8.4	3.6	1.0	1.7	0.9
1985	12.7	8.9	8.9	3.8	0.7	1.6	1.5
1985*	11.9	8.6	8.6	3.3	0.7	1.6	1.0

\*Not counting occupations not included in preceding surveys.

An analysis of the data in Table 2, shows that during the entire study period there has been an obvious reduction in the number of workers calculated per R1 million of SMR done by workers in both mechanized and manual labor occupational skills groups. However, whereas the number of workers involved in mechanized labor has been reduced almost by a factor of 1.5, the number of manual laborers has been cut back by a factor of 2.9-3.5. The reduction—by a factor of 4.1—in the number of group IV manual laborers proceeded even more intensely.

The data in Table 2 are also evidence of the drastic reduction in the number of workers involved in manual and mechanized labor calculated per unit of completed

construction and installation work during the past 6 years. By and large, according to the survey data, the total number of workers involved per R1 million of SMR in 1982 and 1985 fell compared to 1979 by 23.5-28.3 percent, including reductions of 13.6-16.5 percent for groups of workers doing mechanized labor and 38.7-46.8 percent for those involved in manual labor. At the same time the greatest reduction in numbers of workers—46.7-50 percent—showed up in the 4th group of workers.

Table 3 shows the unequal reduction in the number of workers of differing occupations (both mechanized and manual labor) calculated per R1 million of SMR.

Table 3. Number of Workers in Basic Occupations in Linear Pipeline Construction Involved per R1 Million of Construction and Installation Work

	Year						
	1965	1969	1972	1975	1979	1982	1985
Shovel operators	1.27	0.92	0.70	0.57	0.85	0.78	0.65
Wheel excavator operators	0.32	0.21	0.18	0.10	0.11	0.11	0.07
Bulldozer operators	1.89	1.49	1.19	1.02	1.18	0.97	0.89
Tractor drivers	0.61	0.64	0.50	0.40	0.46	0.29	0.27
Pipe-cleaning machine operators	0.42	0.25	0.20	0.20	0.22	0.10	0.07
Pipe-insulating machine operators	0.41	0.30	0.25	0.23	0.25	0.13	0.13
Pipe-laying machine operators	2.63	2.30	1.70	1.75	1.74	1.46	1.49
Insulators	2.46	1.54	0.98	0.78	0.64	0.43	0.53
Diggers	0.23	0.15	0.13	0.03	0.02	0.02	0.02
Wood-cutters	0.27	0.18	0.12	0.05	0.13	0.08	0.04
Electric welders (using automatic welding machines)	0.01	0.04	0.08	0.08	0.08	0.04	0.06
Electric welders (using semi-automatic welding machines)	0.30	0.24	0.20	0.20	0.43	0.20	0.25
Electric welders (welding by hand)	2.52	2.76	2.25	1.90	2.43	1.98	2.00
Riggers	0.28	0.29	0.30	0.28	0.25	0.16	0.20
Machine repair fitters	1.91	1.32	1.07	0.92	1.03	0.76	0.80

As Table 3 shows, during the period under discussion, the greatest reduction—i.e., by a factor of 4.7-5.7—occurred in the number of insulation appliers, who had one of the most widespread heavy unskilled labor occupations in pipeline laying. The considerable reduction in the number of insulators was caused by the introduction of a complex of technical measures. At the present time, bitumen-rubber insulation, the application of which entails heavy manual and auxiliary operations, is used only on small- and medium-diameter pipelines. Factory-insulated pipes are used on 1,420-mm-diameter main gas pipelines and polymer adhesive films are applied to 1,220-mm-diameter oil and gas pipelines.

The number of insulating and pipe-cleaning machine operators was reduced by factors of 3.1 and 6 respectively. The number of pipe-laying machine operators was reduced by a factor of 1.8. A great many of these workers are concentrated in pipeline insulation and laying subdivisions. One of the factors here was the equipping of construction subdivisions with new and more powerful up-to-date machines. Whereas T-12-24 and T-15-30 units comprised the basic pipe-laying machine inventory

at the beginning of the period under examination, it now consists predominantly of T-35-60M, TG-201, TO-1224G, K-594 and D-355 units.

During the period under investigation, there occurred a substantial reduction in the number of workers involved in earth-moving work per unit of construction and installation work. The reduction by almost half in the number of power shovel operators, by a factor of 4.6 in the number of wheel excavators and by a factor of 2.1 in the number of bulldozer operators came about as a result of equipping excavating subdivisions with more powerful and productive machines. If excavating jobs were previously carried out predominantly by E-302, E-255 and E-505 power loaders with bucket capacities of 0.25-0.5 m<sup>3</sup>, by ER-4, ER-6 and ER-7 wheel excavators and by D-157, D-259 and D-271 bulldozers, then at present those units most in use are EO-4121, MTP-71A, EO-5122, EO-5123, ND-1500 (KATO) and EO-652B power loaders with bucket capacities of from 0.65 to 1.5 m<sup>3</sup>, ETR-321, ETR-253 and ETR-254 wheel excavators and DZ-27, D-355A, D-455A, TD-25S, D-155A and other model bulldozers.

During 1965-1985 the number of welders was reduced by a factor of 1.2. The number of manually-welding electric welders (about 90 percent of those doing this type of work) was reduced from 2.52 to 2 persons. At the same time, the number of electric welders using automatic welders increased. The share of workers doing this type of work varies from 0.3 percent at the beginning of the period under consideration to 2.6 percent at its end. The number of electric welders using semi-automatic welding machines stayed at practically the same level.

This reduction is substantial, considering the increase in the diameters of the pipelines being laid as, accordingly, is the 1.3-1.6-fold increase in the amount of built-up metal calculator per unit of SMR. This would have entailed increased labor inputs had the achievements of scientific and technical progress not been introduced.

We can, in the time ahead, anticipate a further reduction in the number of workers involved in electric welding jobs per unit of SMR. However, the number of welders using automatic and semi-automatic welding machines should increase somewhat.

As regards the stepped-up introduction of the achievements of scientific and technical progress when constructing the linear portion of main pipelines, the share of heavy manual labor should be reduced in the next

5-10 years. At the same time, we can look forward to a 20-25 percent reduction in the number of workers doing mechanized labor, and 40-45 percent reduction in manual laborers, calculated per R1 million of work completed.

In conclusion, it might be well to point out that some of the reduction in manual labor inputs during 1982-1985 as compared to 1979-1982 stems from the sluggish pace at which breakthroughs in scientific and technical progress were put to use. This is true not only in basic production processes, but in preparatory-final operations and auxiliary operations as well.

Extensive reserves for reducing manual labor inputs can be realized by industrializing the repair of construction machinery, equipment and transport vehicles. Since the range and numbers of units in the construction machinery park will increase continuously and rapidly, then the transition to industrialized repair methods will free a considerable number of workers to service the equipment with no concomitant increase in the number of service workers.

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## LABOR

**Individual Labor Law Reviewed After One Year**  
18280050 Moscow NEDELYA, in Russian  
No 11, 14-20 Mar 88 pp 8-9

[Article by Konstantin Ulybin, candidate of economic sciences: "Has the Debut Been Successful? An Economist's Thoughts"; first paragraph is NEDELYA introduction]

[Text] *Sharp turns in a society's development mercilessly reveal the conventionality of many social concepts. Just a short time ago it seemed that our socialist society had no place for individual labor and cooperative activity. Nowadays both of them are among the active "players" in our economy. That is why everyone today is discussing with interest the articles of the draft Law on Cooperatives in the USSR. It affects those persons who have already tried out this new form of labor activity as well as those for whom the cooperatives work by offering their goods and services.*

A year has gone by since the individual worker made his debut in our life. Has the "hero" of the anniversary justified himself? This question comes up most frequently nowadays. And any categorical "yes" or "no" with respect to either individual workers or those in cooperatives, any undue haste or emotionality merely hinders the evaluation of social processes—always complicated and multi-valued. What we need here is calm and objective analysis.

Perhaps the most amazing thing is the fact that in only one year we have managed to get used to something which we rejected for decades. At first, many people went to the market as if it were a kind of opening day. They were amazed, delighted, or indignant, but mainly they looked on. And much less often did they buy things. The "ITD person" [individual or cooperative worker] acted timidly, blushed, and mumbled a few, meagre words. Today it's a different picture: the market has found its own commercial features; it is a place where people come to buy or sell. Business, it would seem, has become usual.

But that's not all. During the months which have elapsed the number of persons engaged in individual work has almost quadrupled. Quite impressive, right? But, of course, the count began almost from the zero-point. And, besides, what is a third of a million present-day individual workers in a country where there are almost 60 million people living on pensions? A drop in the bucket—that's all. Therefore, even though the volume of goods and services in this sector has increased many times over, it is still not commensurate either with the potential opportunities of with the population's needs for these goods and services.

Of course, their assortment has been expanding rapidly. Nevertheless, the selection still remains limited. Prices have begun to be reduced slightly on many items, but the overall level is still too high. Most of the "private entrepreneurs" conduct their businesses honestly, but there are also those who have yielded to the temptation of easy profits.

And so it can hardly be said that the debut of the individual and cooperative workers has turned out to be irreproachable. But we should take into account the fact that it's not a simple matter for people in only one year and without any training to enter into a new and extremely complex economic role.

Just recently there has been a significant increase in the proportion of persons who have a negative attitude toward the individual workers. As in the Milan Opera, applause has given way to whistles of disapproval. The increase of a negative attitude toward the "ITD people" is an extremely alarming phenomenon. It's easy to return to a previous circle. But are we not deviating here from the course of perestroika, which is new, unusual, complicated, but so necessary for society?

Disenchantment with the ITD is, to a large extent, the result of those negative phenomena which emerged together with it. Not a single new business avoids dregs and scum. Here too speculators, self-seekers, and grabbers made their appearance, diverting considerable unearned income. They evoke well-justified indignation. But the latter, in turn, is somehow unnoticeably transferred to the cooperative sectors as a whole. But this is really an error. The overwhelming majority of individual workers are honest people. Unfortunately, people employed at government enterprises also steal things. But not all workers are suspected of intrigues. Obviously, we must abandon our prejudices and, at the same time, intensify the struggle by legal means against those persons who break the law. There's no point in being delicate with such "operators."

The negative attitude toward the individual worker is to be explained by those over-expectations and illusions which arose around him during the initial period: public opinion willingly accepts promises which are made and impatiently waits for them to be carried out. And if they prove to be exaggerated, then a feeling of dissatisfaction arises, a skeptical attitude toward the new thing and frequently even a non-acceptance of it. And that's what happened in the case of the individual worker. We wanted so much that he would efficiently provide us with a plentiful amount of fashionable, inexpensive goods and services! But practical experience has shown that he is far from capable of doing everything; there is a great deal that he does not know how to do yet. He does not always have high enough cultural standards, a sense of measure, timing, or enterprise. It's not his fault, but it is unfortunate. Moreover, it's his misfortune and ours as well. Therefore, what is needed here is not scorn but



tolerance and patience, not persecution but help. For the ITD, as well as most likely for everything, euphoric optimism and prohibitive pessimism are equally ruinous.

But now let's talk a bit about specific economic matters. The individual worker is suspected of receiving excessively high earnings. But few people know exactly what these are. Here people rely more on their own intuition. Would anybody open a new business if it did not have much promise? But, on the other hand, why doesn't a person who casts a stone into the "private" garden himself hasten to try himself out in a new business? Or doesn't he wish to receive a bit more money?

Furthermore, their earnings depend on you and me, dear readers. And if we don't like something, if something among these goods and services does not suit us, nobody, of course, forces us to pay money for it. But if we do buy some of these things, that means that we acknowledge our own expenditures to be justified and admissible. But then let's be logical and acknowledge their earnings to be justifiable and admissible.

If we look attentively at the individual worker, the following turns out to be the case: he does not receive anything; he earns...everything. And this makes him different from many of us.

The ITD sphere is an area of genuine cost-accounting relations, whereas the state sector still has a principal predominance of budgetary, administrative, redistributive relations. And here at enterprises workers indeed usually do receive income. They may receive more or less, perhaps justifiable or perhaps not very justifiably. A person may also earn more or less, but it is impossible to have unjustifiable earnings. Any earned income, no matter how high it may be, is socially justifiable precisely because it has been earned.

We are indignant about the high prices on the products offered by an individual worker, and we blame him for intentionally inflating them. But, objectively speaking, this is not so. Yes, prices are still too high. But the will of the individual worker has nothing to do with this. Prices are dictated by the market, the consumer characteristics of items, the level of prices, and the availability of goods in the state trade system. And so, high prices in the individual market attest to the deformation and disarray of the state market. Does the individual worker deserve to be blamed for this?

He is also disliked by many people because, they say, he seeks his own profit. To be sure, he is no altruist, but, really now, what's so bad about that? In my opinion, the vast majority of us also go to work not because of some altruistic motives. Does that mean that all of us must be considered somehow as not completely good, decent people? Interests, said V.I. Lenin, are what motivate peoples. A human being without an interest is not a

human being. One of the reasons for our recent stagnation consisted of the limitation and stereotyping of people's economic interests. Perestroika proposes to adopt all measures for the purpose of activating these interests, of course, in accordance with the society's interests.

And as to the assertion that, by bowing to his own personal interest, the individual worker is infringing upon the society's interest—that is totally absurd! In order to obtain earnings, one must produce what people need and, having obtained a portion of these earnings, pay a tax to the society. And so, a person working in the individual sphere is actually a bearer of both a personal and a social interest. To anathematize him means to essentially limit the possibilities of implementing both of these interests.

Indeed, he does not conceal the fact that he wants to live well. Moreover, he has shown that for this purpose it is necessary to do things—to work, seek, think, try, make mistakes, not stand still, and in no case expect some kind of manna from heaven. Is this lesson to everybody's liking? Many of us have begun to feel the hot breath of extremely energetic individual workers at our own places of employment. THEY are opening photo studios and barbershops, driving taxicabs, sewing fashionable clothing; yesterday they were doing one thing, today—another, tomorrow.... And they are always striving to pass US. Furthermore, THEY are such pushy people that WE are in no hurry to work with them, all the more so in that it has somehow become impossible.

And so it turns out that the individual worker is a very inconvenient figure: he disrupts the measured-out course of life which has evolved; it draws us into a new system of unaccustomed and extremely obligatory economic relations. And so, resistance to the individual worker frequently signifies, in essence, a non-acceptance of the new economic relations and their restructuring.

In a new business the most dangerous thing to do is to stop half-way along the route. There are and there will be problems and contradictions in developing the individual sector. But should we look at them timorously? Or, all the more so, frighten ourselves with the question: how will it all turn out?

Of course, neither the individual nor the cooperative worker will ever replace public production. But they can become its active helpers. According to our estimates, 30-40 million people are capable of taking part in this sector. They can provide society with something on the order of 100 billion rubles worth of goods and services. But, as of now, this potential at best is being carried out to the extent of one-tenth of its possibilities.

And in order to overcome such an imbalance, all of us must, first and foremost, overcome the obsolete ideological view of the "ITD person," as if he were someone

from another social planet. Far from everything individual is private and capitalistic, while socialistic is far from boiling down to merely social. Under socialism the individual sector becomes socialistic in its social essence. Therefore, its development within the necessary limits operates to strengthen socialism. And the Law on Cooperatives is called upon to enhance its role in accelerating the country's socioeconomic development, to intensify the process of democratizing economic life, and to create the conditions for involving broad strata of the population in the cooperative movement.

The local soviets have a large role to play in the development of individual activity and that of cooperatives. Many of their staff members are still guilty of excessive guardianship. Now and then you hear of cases such as the following: someone is not permitted to offer a dog-walking service, or someone is not allowed to conduct excursions. It is high time that we allowed everything except those activities included on a small list of limitations. Let people prove their own competence to the consumers rather than to bureaucratic officials. The less effort that goes into overcoming bureaucratic obstacles, the more will be left for the business itself. And the main thing is that the ispolkom should be economically and vitally interested in the individual's business. So far this has not been the case. All the revenues from the ITD go into the state budget. It would be equitable for a significant portion of them to remain with the local soviets, and it would be a good thing for the wages of the appropriate ispolkom staff members to be directly linked to the revenues which the individual workers contribute to the society. Here too let's be consistent in the utilization of economic interests. We must not be arbitrary with the fate of people who have just barely begun to be assimilated in the new sphere of work.

The fate of the individual worker depends directly on all of us. You and I, dear readers, are his chief customers and inspectors. The most important stamp of approval—the ruble—is in our hands. We must utilize it skillfully. Consider what is too expensive or of poor quality—and don't buy it. Let's not pay for junk, nor perpetuate gray mediocrity or tastelessness.

The individual worker is a manifestation of perestroika and one of its catalysts. He is just learning to walk along the little-known paths of socialism. He is necessary to our society, and he needs our support and help. Let's assist him patiently and wisely.

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#### **Draft Law on Cooperatives Considered Restrictive**

##### **Specific Articles Critiqued**

18280048 Moscow IZVESTIYA in Russian  
21 Mar 88 p 2

[Article by B. Gabrichidze, doctor of juridical sciences: "It's Good, But It Can Be Improved"]

[Text] In my opinion, the underlying idea of this draft law is marked by a creative approach; it is profoundly democratic and progressive. To a large extent, it reflects

the society's mature needs. The spirit and practice of the radical economic changes, which are based upon the Law on State Enterprises, can now be fully extended to the state sector, naturally taking its specifics into account. In short, many positive features can be noted in reading through the draft law, but....

But just what wishes arise after one becomes acquainted with the draft law? The first has to do with the document as a whole. Despite all the exceptional political, economic, and juridical urgency of the act in question, one would still like to see it significantly reduced, made more compact and accessible to the broad masses of the population. For this purpose, the general, declarative principles, which duplicate each other, should be made brief.

Here are some examples of repetitions and declarations encountered in the draft. The introduction states that the law "...is directed at taking all measures to utilize the cooperative forms to satisfy the burgeoning needs of the national economy and the population for foodstuffs and consumer goods," and so forth. This is also mentioned in the first and second chapters. To my way of thinking, it would be better to state this fundamental principle in one place. The same thing also applies to the process of democratization, which is talked about in the introduction and in the first chapter. There are repetitions with regard to the independence of cooperatives, their self-administration, and self-financing.

With regard to the formulation contained in the introduction, there is also something fundamental. It speaks there about the cooperative movement being "...applicable to the contemporary stage of building socialism in the USSR." Perhaps it would be more precise and correspond more to the letter and spirit of the CPSU Program's new edition to speak about the stage of improving socialism in the USSR.

Inasmuch as part of the population has a distorted idea about the very nature of the cooperatives which are now emerging (and some of the latter give cause for this), it seems feasible that the glasnost and accounting of the public opinion being formed on its basis be strengthened in the introduction or in Article 9, which is devoted to the principles of the cooperatives' activities.

Clearly not enough is said in the draft about citizens' initiative. At the same time, the socialist spirit of enterprise and initiative are indivisible from the cooperatives, whose very emergence and functioning are unthinkable without these concepts.

Now let's proceed to some more specific comments and suggestions. The draft (Art. 5, Item 3) does not make any distinction between a board and its chairman, if we consider the present version of the item indicated: "...shall exercise monitoring controls over the activity of

the cooperative's board (chairman)." The word "chairman" should be omitted, inasmuch as monitoring controls over a board naturally assume checking up on its chairman's work as well.

I also have some comments about the essence of certain legal prescriptions contained in the draft. Instead of a cooperative's membership being at least 3 persons, I suggest that it be increased to at least 5-7 persons. Otherwise, we could speak about a cooperative group. The norm to the effect that a refusal to register a charter can be appealed to the ispolkom of a higher-ranking Soviet (Art. 10, Item 4), in my opinion, will not be very effective in practice. Taking into account the hierarchical subordination of ispolkoms and the frequently encountered instances of bureaucratic uniformity of thought, the deciding instance should be a court, and the latter is the only one feasible to speak about.

In Art. 5 it would be desirable to single out the labor collective council, and to briefly discuss its rights and obligations. Article 11 should precisely state that any citizen of the USSR can be a cooperative member. But what about foreign citizens—students or specialists who are living in our country?

Of course, an expulsion from a cooperative can be appealed to a court (Art. 11, Item 4). The previous paragraph of this same item states that a cooperative member can be expelled upon the decision of a general meeting in cases provided for by the charter. Of course, decisions made by a general meeting of the cooperative need to have democratic monitoring controls. In addition to a court, perhaps such a right could be granted to the appropriate leagues (associations) of cooperatives. I would also suggest that Art. 13 be edited to read as follows: "A cooperative shall function on the basis of socialist self-administration, the active participation of its members in deciding all sub-departmental questions, as well as a broad-based glasnost."

In connection with the cooperative movement, which is becoming ever wider in its scale, the appropriate divisions of ispolkoms of the local Soviets have already been created. In my opinion, it would now be feasible to provide in the legal procedure for creating, when and if necessary, divisions for developing cooperatives and individual activity by the Soviets' ispolkoms.

Some articles contain obvious challenge-type or statement-type norms which could be omitted without any detriment to the draft law. For example, "a cooperative should not permit an economically unjustified price inflation" (Chapter 3, Art. 17, Item 1), or the ispolkoms of local Soviets "...are obligated...to use every measure to facilitate the development of cooperatives on a healthy economic foundation."

With regard to Chapter 4: "The State and the Cooperative," Art. 26 needs to be supplemented, in my opinion. The right of citizens to unite in cooperative organizations

shall be guaranteed not only by the economic but also by the political system of the USSR. This must be reflected in the law. Furthermore, Article 26, Item 2 states the following: "state organs must...not permit any kinds of limitations on the creative activity and initiative of cooperative members." To my way of thinking, this is not at all how this part of the item should be structured. I propose that it is better to formulate it (the second paragraph of Item 2) in the following manner: "the state organs shall facilitate the development and independence of cooperatives, increase the effectiveness of their activity, and create scope for the creative activity and initiative of cooperative members."

In Art. 26, Item 4 after the words..."with the aid of the mass news media, the most favorable ideological prerequisites"...the following should be added: "shall summarize and propagandize the advanced experience, disclose the existing shortcomings and omissions in the work"...and further on according to the text.

With regard to Article 27: "The Soviets of People's Deputies and the Development of the Cooperative Movement," inasmuch as the article is specially devoted to the Soviets, it would be desirable to clarify which other state organs are meant further along (Items 1-5). It seems more correct to speak about the organs formed by the Soviets, under the accounts and monitoring controls of the Soviets. Therefore, perhaps, the beginning of the first paragraph of Items 1-5 should be formulated thus: "The Soviets...and their organs" and further on according to the text; Item 1 of the article in question after the word "national-economic" should add: "intersectorial" and further on according to the text.

I also think that in Chapter 11 after Article 10 it would be useful to include an article about the way to dissolve a cooperative. It should set forth the grounds and the procedure for putting a halt to a cooperative's activity.

Further on, in Art. 37, Item 2 it is stated that "the local soviets shall render top-priority assistance to the cooperatives...grant to the above-indicated cooperatives the privileges of obtaining space and material resources." It should be stated a bit more specifically: what kind of assistance? what kinds of privileges? Article 37, Item 4 also needs more explanation. First of all, what organs of state administration do they have in mind when they speak about their interaction with the ispolkoms of the local soviets? Is it the local organs of the ministries, state committees, or departments? Or the organs of production associations? And what specifically is meant by the formulation: "...the ispolkoms...are duty-bound to use economic methods for counteracting the monopolistic tendencies of certain cooperatives"? They should cite at least a brief list of the economic methods which the ispolkoms are supposed to use. And, in this connection, does the application of organizational-administrative methods completely lose all meaning?



In my opinion, the draft fails to provide distinctly enough for the link between cooperatives and the Law on Individual Labor Activity. These interrelations are to be seen in the participation by cities on a voluntary basis in the activities of consumer cooperatives, teaching stenography and typewriting, conducting classes by means of coaching people employed in the cooperative system, or enrolling in it or other educational institutions for the purpose of acquiring a specialization for work in a cooperative.

Article 36 (Item 2, Paragraph 2) requires some clarification. The following formulation must be "decoded": "the state shall adopt measures to prevent instances of utilizing cooperatives for private-enterprise activities employing hired labor under the guise of creating cooperatives." How should we create a strong shield against such a vicious practice, and what specific legal guarantees against it should be stated in the law? These questions require definitive answers.

It seems that the draft should deepen the line directed at strengthening the principle of legality in the work of the cooperatives. Therefore, it seems urgent to have a separate article about the mutual relations between cooperatives and the legal organs—the court, procuracy, people's control, and the arbitration board. It should formulate the foundations and directions of interaction, the limits of these organs' participation in monitoring the activities of the cooperatives, as well as in resolving disputes, problems, and matters arising between them and other organizations, as well as state enterprises; between cooperatives and citizens.

### **Agricultural Cooperatives Examined**

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22 Mar 88 p 2

[Article by M. Bronshteyn, academician of the Estonian SSR Academy of Sciences, and V. Udam, first secretary of the Estonian CP Pyarnuskiy Raykom, Hero of Socialist Labor: "Guarantees of Independence Are Needed"]

[Text] The draft Law on Cooperatives precisely defines a kolkhoz as "an independent, collective commodity-producer," interacting on contractual principles with other enterprises and organizations of the agroindustrial complex. But the rights of a kolkhoz as a commodity-producer are limited: in essence it lacks the capacity to choose an economic partner and the forms of selling its products. Article 31, Item 2 states the following: "Kolkhozes and other agricultural cooperatives shall conclude with enterprises and organizations which carry out the procurement and processing of agricultural products contracts for delivery of the latter, proceeding on the basis of the state order conveyed to the agroindustrial associations, agro-combines, and other agroindustrial formations, enterprises, and organizations (emphasis ours)."

If state orders are established at the maximum level, then the kolkhoz's entire economic independence as a commodity producer will be reduced to a minimum. Furthermore, by concentrating material resources in their own hands, the state organizations have achieved a monopoly position with regard to the agricultural commodity-producer. This same Article 31, Item 2 points out that the execution of the state order ensures the allocation of material and technical resources to the farms; and this, by the way, is somehow relegated to the category of economic methods. Thereby the draft law provides for the retention of the "food appropriation" and "industrial-goods appropriations" systems, which sharply limit the kolkhoz members' rights as commodity-producers.

We understand that the limitations involved were dictated by the attempt to have in the state's hands a centralized stock of food for guaranteed delivery at firm prices to major cities, industrial centers, and so forth. But excessive centralization of the food stock, which has not up to now ensured any steady or reliable supply of food, has merely increased the expenditures of the state and the society as a whole for the procurement, transportation, and sale of food products. At the same time, the responsibility and initiative of the local organs have been undermined.

We are told, for example, that if Estonia's scale of deliveries of meat and dairy products to the union stocks were to be reduced, we would consume more of them ourselves. This is a profound error. Under the conditions of the conversion of the republic's APK (agroindustrial complex) enterprises to full cost accounting, mutually profitable exchange becomes the only way to obtain the necessary producer goods and consumer goods from other regions of the country. And it is not obligatory that this process must be conducted solely through the union departments, although we do understand the concern expressed by the administrative machinery of these departments.

We do not think that, under the present-day conditions of disorder in the commodity coverage of the population's monetary income, we can abandon the system of obligatory purchases of agricultural products at the behest of the state. But, you know, this will not go on indefinitely. Let's recall that during the transition from food appropriation to the food tax at the beginning of the 1920's the amounts of the food tax were substantially reduced in the beginning, as compared with the food appropriation. And then the tax in kind was replaced by a monetary tax. As a result, the amount of food on the market sharply increased, prices became lower, and the Soviet chervonets (ruble) became one of the firmest currencies, providing the state with the necessary food purchases. Moreover, with normal commodity payments and a mutually profitable level of purchase prices, the peasant strove to maximize grain sales to the state, which ensured a guaranteed market for products. The change in these conditions at the end of the 1920's compelled us to return essentially to the system of appropriation (obligatory deliveries).



I think that in the not-too-distant future we will have to make the transition to normal commodity-turnover within which the formation of centralized food and financial resources will be ensured by economic methods. Accordingly, even a state order will be conveyed not to the agricultural enterprises or associations, but only to the state requisitioning and processing enterprises. To our way of thinking, this should also be precisely specified in Article 31, Item 2 of the Law on Cooperatives. The principal form of monetary revenues coming in from the agricultural enterprises to the state—the owner of the land—will become, as provided for in the draft law, lease payments, taking into account the quality of the land and other natural-economic conditions. At the same time, there will also be an enhancement of the role to be played by the income tax in ensuring a balanced economic and social development for the given territory.

Also extremely acute is the question of ensuring the normal commodity turnover between the agricultural and stock-producing enterprises. Utilizing their own monopoly position, the latter constantly raise the prices on the producer goods and services being delivered by them, and this, naturally, also affects the production costs of agricultural items. At a congress of Estonia's kolkhoz members it was proposed that prices be lowered on poor-quality equipment or incomplete sets of equipment being delivered in the localities, depending upon additional expenditures of the farms. But how can this be implemented if we have no choice of suppliers and probably will not in the immediate future, even during the transition to the so-called wholesale trade in producer goods? We see the solution of this problem in the creation of a common market of equipment and technology within the CEMA framework, as well as in the development of cooperatives with regard to small- and medium-scale enterprises producing a large number of modifications adapted to the specific conditions of the region involved. Thereby the conditions will be created for a healthy competition among the producers and a reduction of excess expenditures in all units of the APK [agroindustrial complex].

At the congress of Estonia's kolkhoz members it was noted that the draft Model Charter fails to provide the necessary legal guarantees of the kolkhozes' economic independence or the needed legal and economic responsibility of the unit managers as well as the economic partners for their own decisions and actions. The draft Law on Cooperatives provides such protection and defines the economic and legal status of the cooperative within the system of social production relations. Nevertheless, the draft also has certain contradiction between Articles 9 (Item 3) and 31 (Item 3), which, in our opinion, should be eliminated; and we should more precisely establish the responsibility of officials and higher-ranking institutions if they are to blame for a farm suffering losses.

Adoption of the Law in the form in which it has been presented for discussion obviously excludes the necessity of having a standardized Model Kolkhoz Statute for all regions of the country.

It was precisely in the great diversity of forms among cooperatives that V.I. Lenin saw one of the important advantages allowing the peasantry on the basis of its own experience to rise to increasingly effective forms of managing a farm. Cooperatives are opening up the possibilities for all measures of developing local innovation and initiative, taking into account the specific features which are so great in agriculture. We are now observing the return of old and the emergence of new forms of cooperation both within agricultural enterprises (family and collective contracts, particularly in their lease form), as well as in inter-farm relations (territorial agroindustrial associations, agrofirms, agrocombines, etc.). But multiplicity of forms is contradicted by stereotypes—the attempts by some unit managers to cram vital creativity into the Procrustean bed of administrative-bureaucratic schematics and structures.

The authors of the present article, who as far back as the early 1970's took part in working out the economic and legal model of the first few rayon agroindustrial associations in the Estonian SSR, often have to listen to and read, with a certain feeling of guilt, unflattering comments about RAPO [rayon agroindustrial association] as yet another bureaucratic structure. But, of course, RAPO was conceived as an economic form of territorial cooperation among independent agricultural, servicing, and processing enterprises, voluntarily combining the efforts and, in part, the funds for the joint solution of production and social problems. Provision was made for a democratic system of regulation with a relatively small working apparatus and economic methods of regulation. But during the process of approving the elaborated economic mechanism and legal status of RAPO each of the central departments having a practical veto power attempted to exclude or deform the statutes which affected their interests. Nevertheless, the experimental charter of the first few RAPO's provided great opportunity for economic maneuvering. Let's note that the Estonian SSR's first RAPO worked out and applied a mechanism of forming and utilizing centralized RAPO assets on a resource-normative basis, which allowed them, taking into account the interests of all the RAPO members, on a resource-normative foundation, to upgrade a lagging farm and to decide upon certain general-economic and social programs.

At the beginning of the 1980's a draft was worked out in the Estonian SSR for creating a republic-level, cost-accounting agroindustrial association, in which it was proposed to include on a cooperative basis state and collective farms encompassing the production, processing, and sale of agricultural products. Here it was proposed to make the transition to economic methods, while sharply reducing the administrative machinery and strengthening the democratic principle in forming

the APK's administrative organs and mechanism. But when the provisions, common to the country as a whole, concerning RAPO and the agroindustrial committees were adopted, the striving for "independence" in the localities began to be curtailed in all manner of ways. Nor are there sufficient guarantees against bureaucratic pressure from the Gosagroprom [State Agroindustrial Committee]. By the way, there is no precise definition of the USSR Gosagroprom's place and functions within the APK's economic mechanism.

Perhaps we should give some thought to converting, while taking specific conditions into consideration, the republic- and oblast-level APK units to the status of state-cooperative associations or leagues. Let's note that the sovkhozes have remained somehow outside of the system, as presented in the draft Law on Cooperatives. And it was not by chance that an attempt to convert them to the status of kolkhozes emerged in Estonia. Kolkhozes possess more economic independence. I think that the solution to this problem lies in granting sovkhozes the very same rights that kolkhozes have. Accordingly, the kolkhoz councils (and likewise the agroindustrial association councils) should become democratic economic organs, representing all types of agricultural enterprises and cooperatives in the localities and at the center.

Naturally, the attempt to work out the fundamental (and not too numerous) legal documents defining the common norms for the functioning of agricultural cooperatives for the country as a whole must not lead to excessively rigid regulation, which would fetter initiative in the localities. The essence of the restructuring of the economic mechanism which is taking place consists of replacing the bureaucratic centralism that has evolved with a democratic centralism. And the latter, in accordance with the well-known Leninist principles stated exactly 70 years ago, in March 1918: "...proposes, for the first time in history, a created possibility for the full and unhampered development not only of local features but also of local innovation and local initiative, a diversity of paths, devices, and means of moving toward a common goal." Therefore, we consider that, within the framework of the All-Union legislation defining the most general conditions and norms for the function of agricultural cooperatives, republic-level legislation should be worked out guaranteeing the maximum consideration of local features, as well as the democratic expression of the working people's will.

2384

## DEMOGRAPHY

### Demographic Statistics Cited

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INDUSTRIYA in Russian 23 Jan 88 p 3

[Interview with Professor Dmitriy Ignatyevich Valentey, director of the Center for Study of Population Problems of the MGU [Moscow State University] Economics Department and doctor of economic sciences, by SOTSIALISTICHESKAYA INDUSTRIYA correspondent A. Lvov: "The Demographic Barometer"; first paragraph is editorial introduction]

[Excerpts] Demographic statistical data, including on the birth rate, mortality, and life expectancy, have begun to be more widely published lately... Professor Dmitriy Ignatyevich Valentey, director of the Center for Study of Population Problems of the MGU Economics Department and doctor of economic sciences, comments today on the demographic summary prepared by the USSR Goskomstat [State Committee for Statistics] at the request of our correspondent, A. Lvov.

[Answer] Readers who are concerned with demographic problems may have noticed what has been published on improvement in the demographic indicators. Yes, there is evidence of some improvements.

I have before me statistical data—columns of figures and various tables—which are unquestionably of interest not only to the specialist. There are many things that please us, and many things that give us cause for serious thought. As an example, an average of 200,000 persons less died in the 1986-1987 period than in 1984, and the death rate of able-bodied men from accidents decreased by 37 percent. The birth rate has risen over the past 2 years. Over this period, 5.6 million babies were born each year, whereas 4.9 million were born in 1980. Average life expectancy for the entire population of the country increased by nearly 2 years; for men, it increased by 2.6 years. In reviewing the natural increase in population, we observe definite improvement: the overall coefficient was 10.2 per 1,000 residents in 1986, compared with 9.2 in 1970. This is very gratifying.

But how stable are these trends? What are the prospects for development of the demographic situation?

The Goskomstat data attest to the fact that the population problem continues to be acute, despite definite progress. True, the birth rate, mortality and life expectancy indicators have become better compared with the data from the late 1970's and early 1980's. But if we compare what has been achieved with the best indicators (mortality was the lowest in the 1960's and early 1970's, let us say), it will not be such a glowing picture. According to the United Nations, the proportion of world population living in the Soviet Union will decrease to 5.1 percent by the year 2000, compared with 7.1 percent in 1950, unless there is a fundamental change.

There continues to be a substantial difference in the population dynamics of individual regions. The population of Central Asia, Kazakhstan and Azerbaijan comprise about 28 percent of the USSR's population, and now account for 40 percent of the overall increase.

The demographic situation that is taking shape in the RSFSR, the Baltic republics, and certain other republics is quite complicated. It is particularly acute in the RSFSR, chiefly in the nonchernozem zone. Population reproduction is not being provided for here in the rural area now, and the reduction of the outflow which began to show in the early 1980's is not improving the situation

essentially. The drop in the natural increase rates in the 1959-1984 period had an effect on the decrease in the RSFSR's share of the country's overall population.

In the rural regions of Central Asia and the Transcaucasus, there continues to be a considerable number of excess able-bodied persons among the citizens of indigenous nationalities with low vocational and territorial mobility.

The mortality rate for children and males is still high in the country. The lowest mortality indicators by age for men were noted in 1960-1965. After this, we observed an increase in mortality in all age groups over 20 and a decrease in average life expectancy as a result. The difference in average life expectancy for men and women is 9 years. True, this is somewhat less than previously. These indicators are about 10 years behind the best in the world for men and 8 years behind for women.

And in the infant mortality rate (this is one of the most important social and demographic indicators) we are far behind the economically developed capitalist and socialist countries. Infant mortality (up to 1 year) in the USSR is 3 to 3.5 times higher than in Japan and the Scandinavian countries. Each year 130,000 to 140,000 of our children die before reaching 1 year of age. While 3 to 3.5 percent of children born in the USSR do not live until age 5, this figure is about 1 percent in countries with the best indicators. The proportion of children born with various psychological and physical defects is increasing.

It must be said that the total number of births began to increase in the 1970's—from 4.1 million to 5.6 million in 1986. The proportion of second and third births increased as well. All this, coupled with a definite decrease in the intensity of the death rate and an increase in life expectancy, led to an increase in population in the country as a whole and in certain republics—the RSFSR, the Ukraine, and Belorussia.

The increase in number of births is related to the influence of the combined demographic policy measures introduced in 1981. But not only to this. The favorable age structure—a transient and temporary factor, to a certain degree—had an effect. For this reason, it is doubtful that we can expect the number of births to

continue at the current rate. Many years of effort will be required to increase life expectancy, to further improve the people's way of life and nutrition, and to develop popular athletics and sports. Measures such as extending leave with partial pay for child care up to a year and a half and unpaid maternity leave up to 2 years, as well as extending the number of days with pay to look after a sick child, will play a positive role as well.

The number of divorces continues to be high today: about 1 million annually (one divorce for every three marriages). In the process, 500,000 to 600,000 children lose one of their parents—the father in most cases; the number of illegitimate children and the proportion of persons who deliberately do not enter into marriage is also increasing.

The intensive process of aging brings about complex economic and social consequences. The number of elderly and aged persons is rising faster than the country's total population. Thus, from 1959 to 1987, the number of persons of retirement age rose by 76 percent, while the country's total population increased by one-third.

The USSR Goskomtrud (State Committee for Labor and Social Problems) has been given the responsibility of carrying out an efficient demographic policy. The development of long-range, comprehensive republic demographic programs has been begun under its aegis. Unfortunately, there are few demographic specialists in the Goskomtrud organs. Moscow University could assist in retraining such personnel.

The nonchernozem zone, which is home to more than 61 million people, is exceptionally important for our country socially and politically. But the social aspect is more than frugal in the plans to develop this vast territory. We do not have to mention results of an upswing in the nonchernozem region at present either, including with the help of union republics, although a great deal has been done. The remote area of Russia is being transformed with intolerable slowness. Incidentally, the "Tashkent" Sovkhoz was established in one of the oblasts in the nonchernozem zone with the help of the Uzbek SSR. Now, I am told, the only thing left from the patrons is a sign...



## PRODUCTION

### Machine Tool Building Association Director on Perestroika, Problems

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pp 1-3, 8

[Interview with Vladimir Pavlovich Kabaidze, general director, Ivanovo Order of Lenin Machine Tool Building Production Association imeni 50-letiya SSSR; hero of socialist labor, by Leonid Pleshakov, OGONEK special correspondent, on or about 29 December 1987 in Ivanovo: "Cost Accounting's Sharp Corners"]

[Text] I arrived in Ivanovo 3 days before the New Year. Kabaidze himself had suggested this: closer to the New Year it would be possible to tally up the association's performance under the conditions of self-financing and cost accounting, to which it was converted in January 1987, and to see what the experiment had yielded in the past 12 months. Even though things had been arranged in advance, Vladimir Pavlovich was not especially looking forward to our talk.

I have a friend, he said, who collects everything that is published about me and our association. He refers to it as "Kabaidzeology." It is a good thing that he has been my friend since our schooldays. All these newspaper and magazine clippings are among his little pleasures. But just imagine if all someone else hears is: Ivanovo, Ivanovo, Kabaidze, Kabaidze, over and over again. It will get on his nerves. Especially if he happens to be one of my fellow directors who is always after me to follow someone else's example. This has happened more than once. One time it will be a kolkhoz chairman, another time it will be a plant manager: see how they do it! Imitate them! But that would not help matters.

[Question] Why not?

[Answer] There are certain reasons.

[Question] But do you, for example, see why you are successful but others are not?

[Answer] I think it is because too many people remember the price we had to pay. Now everything is fine, the association is in the public eye, the people are making good money, many of them have received decorations, and the director has not been forgotten. But after all, we have been working here for 12 years without the *progressivka* [payment on a sliding scale for completion of work in excess of the plan] and bonuses. My colleagues tell me: "You've really pulled it off! If I don't pay the *progressivka* for just 3 months, everyone will run off." Who wants to wear such fetters about his neck after this?

[Question] But for some reason, your people didn't run off...

[Answer] There is a whole complex of reasons here. There is no single, immediate answer.

[Question] Let us then talk about cost accounting and self-financing. Your association operated under the new system for a whole year. What do you think, was the experiment a success?

[Answer] Not as yet.

[Question] Is your opinion based on tangible facts, calculations and observations?

[Answer] Naturally. But to make you understand why I do not hasten to extol the experiment, I wish to return to its very beginning.

The history of its introduction in our association is as follows. Sometime in September 1986, we received the order from the Ministry of the Machine Tool and Tool Building Industry: prepare to operate on a self-financing basis starting in January 1987. We were psychologically ready for this a long time ago. What was the sense of first transferring all profit to Moscow and then sending our director to Moscow to claw back as much as he could? The result of the latter circumstance was the violation of the justice principle. The winner was frequently the one with the strongest elbows. It would have been more correct to leave the money where it was earned. Understandably, some of the profit must go the Center for certain purposes that are higher than the interests of a given collective—for our Ministry of the Machine Tool and Tool Building Industry, for example, or for public needs. But it is entirely logical that a very definite part should remain for those who have earned this profit: let them feed themselves.

In other words, what we were offered was very much to our liking. We couldn't have asked for anything better.

Right then, in September 1986, we began studying everything published in the press on this topic. Most of what was written was about the Sumy experiment which to all appearances was quite successful. To be sure, there was one disquieting feature about it: it was a single academic experiment; how it was proved itself in mass practice was another matter. We played out an Ivanovo version of the experiment on paper with Vladimir Valentinovich Pavlychev, the chief of the economic planning department, and everything turned out very well indeed. The hatchet was under the bench, as the saying goes, and we had searched for it for such a long time. We began pestering the ministry: hurry up and give us the confirmation of the right to operate like Sumy. But things dragged on in Moscow. No one was speaking plainly. We finally received a reply in January 1987. We read it, analyzed it, and saw: the noose.

[Question] In what sense?



[Answer] All coefficients we had presented in keeping with the Sumy experiment were ignored and our calculations were crossed out. And without them the new program remained the same old song.

[Question] That is not entirely clear. Please explain what you mean.

[Answer] In order to explain, I must make a brief digression into our enterprise's history. You have probably noticed that a new building, a veritable "barn" a hundred thousand or so square meters in area is being erected on our grounds. It is in actuality a new plant. It should have roughly the same production area as we do at our old plant. Our expansion was the subject of numerous decrees at one time. But they didn't get around to commencing construction for a long time, and when they did it went fair to middling, as the saying goes. While all this dawdling was going on, we in Ivanovo came to the conclusion that we had no need of this "barn" whatsoever. And indeed it is our view that there is no need to build anything new for machine building in Russia in general.

[Question] Why?

[Answer] You are probably aware that our association does a great deal of work "horizontally," i.e., bypasses all management hierarchies, organizes direct ties with large clients, develops new machines and technologies for them, and also advises them how to restructure production on the basis of new technology. In order to make all this go properly, we have to study the work of many enterprises, frequently very privileged, well-equipped enterprises that did not fail to attract heightened attention. And just imagine: you come to one of these renowned giants, where you will see a new, building with an area of 100,000-200,000 square meters packed full of general-purpose machine tools but almost empty of people. One asks: what was the point of building it?

When I traveled about the country, seeing one and the same thing everywhere, I also thought about my own enterprise. When construction commenced on it in 1956, there was practically no housing. When construction was completed in 1969, 95 percent of the allocated capital investments in the industrial site had been utilized. They did not succeed in submitting just one facility for acceptance: the laboratory engineering building. But even the housing and sociocultural facilities that were specified in the plan were not built at all.

I remember a time when machine building in our country operated in three shifts.

[Question] So do I.

[Answer] Then we started increasing the size of our machine tool inventory. We raised the production of machine tools initially to 125,000 units a year, then to 200,000 and 240,000...The principal emphasis was on

quantity. What is the meaning of 125,000 metalcutting machine tools a year? It means that the third shift vanished after a brief period of time. And 200,000? The second shift also began diminishing. It soon developed that even the first shift was not completely supplied with machine tool operators. The branch kept turning out new general-purpose machine tools, and increased the machine tool inventory. A strange situation has developed: the country has more machine tools than machine tool operators, but we still shout: give us new machine tools! More, more, and more! Sometime in 1968—I was then working in Ryazan—this flaw became apparent. But instead of analyzing the situation and making an intelligent decision, they began thinking up new indicators and new slogans: "Let us increase the shift coefficient!" How and with what work force was not clear...

[Question] What was the source of this bungling?

[Answer] When the economy is managed on a non-integrated basis, there will inevitably be a lag in some respect and in order to make up for lost time, the shout will go up: you must! If any one, even the most important link, is torn out of the common economic chain and the entire chain of its relations is not analyzed, despite our good intentions all our decisions will remain nothing more than idle talk.

This is why—I return to the beginning of the topic—after analyzing the situation, we tried to proceed from the logic: why erect a new building if, after stuffing it full of hundreds of general-purpose machine tools, we will not have the workers to operate them?

[Question] Are you not being too categorical, Vladimir Pavlovich?

[Answer] Not in the least. Let us count together. Only six percent of Ivanovo Oblast's able-bodied population remains in the countryside today. It is for this very reason that our plant has to send as many as 600 persons to perform agricultural work in the summer. This is when we have an aggregate work force of 6000. If we erect one more building and manage to obtain housing to match, I will also have to take the countryside's remaining workers. I am certain that they will come: we pay good wages, the enterprise is prestigious, and we offer all manner of urban benefits. As a result, I will have to send not 600 but 2000 persons into the countryside. And naturally I will not send the best. Instead I will send yesterday's villagers whose skill level is low. Hence I must know beforehand that I am hiring temporary workers, not seasoned workers, who have not yet learned anything in the city and who will do a slipshod job in the countryside. Such is the interrelationship.

[Question] Could you not have resisted this construction earlier?

[Answer] I tried. I spoke out against it back in 1981. We even developed our own counterproposals here, in Ivanovo, and submitted them to the ministry. We said: build us the laboratory engineering building that will become the brain center not only for Ivanovo but also for a large number of *smezhniki* [factories producing parts for use by another] that will use our blueprints and that will form a single association together with us. We requested money only for housing and equipment. This would have made it possible to transfer people to a continuous work routine. According to our reckoning, this would save the state a hundred million rubles.

But those were not the times for such initiatives. And, strictly speaking, we did not yet have sufficient authority. In general, our proposals were not accepted. And conversely, it was decided to expand production by the old extensive methods—by increasing production area. In short, the foundation for the new building was laid.

And in late March 1985, I was unexpectedly invited to a talk at the CPSU Central Committee and was told to speak not politely (as was previously the case) but to the point. And so it was that I said that there should be no new construction in the nation's machine building industry, that production should be increased only through retooling. I also said that we should dramatically reduce the production of what the country does not need, in particular, general-purpose machine tools. And the capacities of our common misfortune—construction—should be focused only on social issues. I also repeated this at a conference on scientific-technological progress in the same year.

But alas, even in 1987, when we started working on a self-financing, cost accounting basis, things remained the same for us.

[Question] However, as far as I know, according to the statute on self-financing, within the framework of a certain coefficient, enterprises receive the right to decide the proportions in which to spend the profits earned by them on the development of production, scientific-technological progress, material incentives for personnel, on sociocultural services, and housing construction.

[Answer] That is just what we also thought initially. But the time came to dispose of the earnings and everything returned to the old ways. Nineteen million rubles were taken from our profits and allocated for the development of production, i.e., the construction of a new building, in 1987; this was 251 percent of the preceding year. However, we did not collect 11 percent for the sociocultural funds during the same period.

A still more characteristic picture of "self-financing" is forming for 1990 when our construction will already be completed. If we compare 1986 (before self-financing) with the year 1990, we will see that the funds remaining at the disposal of enterprises decline from 43.8 percent of total profits to 31.5 percent. When translated into

Russian, this abracadabra means a still greater degree of centralization than before. And this is called self-financing? I do not venture to say that this was the picture that prevailed at all enterprises because even in the period of glasnost it is impossible to learn what the other plants received. This might have been due to the fear of criticism or it may have been that the "higher-ups" themselves did not know what is going on. Who could explain to me the reason for such strict regulation of the share of the profits that is left to the plant? What kind of proprietors are we if the percent that we can allocate for sociocultural services, for the material incentive fund, and for technical retooling is decided for us "up above?"

[Question] Who made this decision?

[Answer] Our ministry. As in the past, they first took everything from us and then allocated as much as they deemed necessary for the purposes they considered most important. Believe me, I am not talking about the injury to me personally. I now have no choice but to finish this "barn." I am indignant about our dogged determination to build as much as possible. And any attempt to depart from the stereotypes is bogged down in insuperable resistance.

[Question] I would now like to discuss your products. Why have they made your association so popular?

[Answer] It is now recognized throughout the entire world that a country's inventory of machining centers, which are two generations ahead of general-purpose metalcutting machines, is one of the indicators of a country's industrial level. According to our estimates, the national economy needs tens of times more machine centers than we are producing. To be sure, at the same time we are continuing to turn out an enormous number of general-purpose machine tools. This would seem to be an absurdity. But if you ask Gosplan, you will be told: there is still a demand for general-purpose machine tools. Strange as it may be, this situation continues today, at a time when it is not necessary to convince anyone that a machining center is better, that this is progress, and so forth. I think that this paradox is based roughly on the following reasoning: there aren't going to be enough machining centers to go around so it is better to take what is available. This is the usual psychology that is generated by scarcity. The only bad thing is that someone else pays for the old [machine tools].

In a word, there are so many hooks here that they cannot be disentangled even today. The sensible thing would be for scores of plants to discontinue producing obsolete machine tools because they can result in nothing but the ruination of the country. Through their products they determine our technological lag in the future. What sense does it make if I produce machine tools that are profitable to me but that are ruinous, unprofitable or even unnecessary to the customer? What is the sense of self-financing if it means that some prosper to the detriment of others, to the detriment of the state?

[Question] But when the customer begins operating on a self-financing basis, he will not buy what he does not need.

[Answer] If his hands are untied and if there is no shortage of the products he needs. Frankly, I would even recognize a volitional decision "from above" to change the structure of our machine tool building. Unfortunately, no one is making such a decision.

[Question] But the ministry should understand what is what...

[Answer] It does understand, but every day it is told: turn out the products! You are not fulfilling the plan! Here it is necessary to understand what the country needs today: rubles that the enterprise will bring in or future technological progress. It is easy to make rubles on the basis of already assimilated products without any risk. But entering into a new activity presents a risk to the enterprise. Our competitors in the West modernize machine tool building every 5-7 years. There are those in our country who contrive to change their product mix every 10, 15, and even 25 years. And if machine tool building is so ruinous and immobile, we have no reason to expect progress from tractor and agricultural, food industry and light industry machine builders, and so forth. We have appealed to them to promote progress and to modernize but to no avail. Machine tool building is on the leading edge of scientific-technological progress. If it lags, everything else automatically lags as well. And there is no use waiting for change here. Unfortunately, self financing also does not invite the development of new products.

[Question] But why? If you are permitted to sell your machine tools for a price that fully compensates your costs and brings you a sufficient profit...

[Answer] Even then the incentive is small. The transition to new machines is always quite a painful process. Not only to us but to our foreign competitors as well. But it is not by chance that before every spurt they try to accumulate reserve funds in order to make the situation less painful. We cannot do this. We, for example, surpassed our commodity output target in the first year of the five-year plan by approximately three million rubles, but in 1987 we were 1.8 million rubles short because we changed over to new machines. So it is that we nevertheless have a "plus" for the 2 years. But unfortunately this is not my reserve. Everything is written off from our accounts. Whatever falls off the cart is lost.

We consider product modernization to be the most important target in machine tool building. We have raised it as follows during the various years of the five-year plan: 1986—8.2 percent; 1987—25 percent; 1988—81 percent. In 1989, it will reach the 92 percent mark. No other machine tool building plant in the nation knows such product modernization.

[Question] There is tremendous demand for what you are doing now. Do you change machines for more sophisticated machines because you are afraid of falling behind your competitors.

[Answer] If we do not continuously change them even without waiting for demand to decline, we will inevitably fall behind. And we do not want this. The only bad thing is that we are not economically encouraged to take part in this race. And on a moral plane, as I have just told you, we are even forced to do the opposite.

And the ministry, but not the ministry alone, but the entire system...Listen to just one more instance. For a long time, we had to be successful not just every year, but every month as well. Of late, performance has been reckoned on the basis of current results from the beginning of the year. But I well remember a recent case. In 1985, our plant produced almost eight million rubles' worth of output in excess of the plan for 7 months. In August, however, we failed to fulfill the plan by 500,000 rubles for objective reasons! What was the result? I was hauled before the ministry's collegium and our former minister began thundering: "This is a disgrace! How could you allow the plan not to be fulfilled?"

It was a first-class dressing-down. Do you think his head was aching about me? Nothing of the sort. He was so short with me because many plants had failed to fulfill the plan for July and for the first half-year and because he hoped to use our above-plan rubles to cover the shortfall of other plants whose situation was so hopeless that there was no point in scolding them.

It is simpler to patch departmental holes with our rubles than our promises to put the machinery of tomorrow into production.

[Question] But cost accounting is supposed to dramatically change all that now.

[Answer] That is the hope of many. But I said from the very beginning that self-financing and cost accounting are not a panacea or a magic wand that will solve everything all at once. This is a new thing that must be thoroughly checked out and debugged before we dump everything on it that we could not deal with in the past. And the fact that even under the terms of the experiment we are waging an unsuccessful war against the new building is proof of this point.

[Question] And if you had the authorization to do so, would you terminate its construction?

[Answer] Unfortunately, it is now too late to terminate it: 15 million rubles have been invested in it. The only issue now is to complete construction in the shortest possible time.

[Question] Was there another way of increasing the production of machining centers?



[Answer] When we develop the concept of a future machine, we call in potential customers and, knowing their response beforehand, ask them: "Do you want such a machine?" "Ohhh" is their enraptured response. "Then enter into a cooperative arrangement. On the basis of our blueprints, we can organize for you the production of assemblies for this machine. You will pay us for the final product." The transaction is simple: each "co-operator" supplies some one assembly, that consists of 20-30 parts, for my entire product and receives in return a sophisticated machining center.

[Question] And what is the advantage for you?

[Answer] It is a direct advantage. We increase production on the one hand. On the other hand, we have the possibility of rebasing the released work force so that it can create new machines.

[Question] That is, you can build up a brainpower reserve for the future?

[Answer] Yes.

[Question] But I see one subtlety here. Only enterprises that could not live without you, without your machines, as you call them, can enter into such an informal cooperative arrangement with you because only these machines can turn out the products that are manufactured by these partners. In turn, their output was very important to the nation and there was special demand for it.

[Answer] That is so. But other enterprises: ZIL, GAZ, and so forth, began joining our effort gradually.

[Question] But they, to use a sporting term, are in the superheavyweight category.

[Answer] I agree. But that is not the only point. In the nation, there are now general directors who think along new lines, who have searched for new ways of working, i. e., they would sooner or later come to us. They could not fail to come to us.

[Question] And start working with you "horizontally" from the same money-box?

[Answer] Approximately. We pay them for assemblies that are fabricated for us and they pay us for the finished machining centers. I cannot say how much for each one. During all this time, we have developed 35 types of these machines. We are presently working on about 15 at the same time. The prices vary.

[Question] How many times greater is the labor productivity of machining centers compared with conventional machine tools?

[Answer] From approximately 5 to 15 times greater. But their advantages cannot be seen only in higher labor productivity. There are parameters for which two of

these generations of machine tools simply cannot be compared: precision and the quality of machining of pieces. At one time, we supplied the Leningrad "Kirov Plant" Association with a machining center that was need to machine one complex part. Every part went through a multitude of operations which required that the parts be transferred from one machine tool to another. The result was a loss of precision, disputes concerning acceptance, etc. When the Kirovites received our machine and our programmers compiled a program for the machining of these parts, the monthly output program was fulfilled in just four shifts. The quality was excellent, there were no frayed nerves, and there was complete understanding on the part of inspection and acceptance personnel. So it is that a machining center represents another level of production, other working conditions, another philosophy, and not just higher productivity.

And it also unties our hands in such a complex matter as the transition from one type of machine to another. We have the possibility of restructuring in a very short period of time. This is very important because there are always two factors involved in all production: how to enter the market and how to get out of the market. Everyone among us talks about the former to a greater or lesser degree. But I have not read or heard anything instructive concerning the latter. And it is the second problem that tortures many plants. Even when it is acknowledged that they are turning out trash and defective products, they are not able to halt production. The Yenisey combine was criticized not long ago. No one needs it but nevertheless its production continues. The reason: its production technology is so involved that it cannot be restructured for a new product. However, when a plant enters the market, it cannot leave it. For any Western firm, the inability to get out of the market is a murderous factor. But in our country, society has to pay for the production of products that are not needed. There are many such examples.

Unfortunately, we have for a very long time devoted our attention to increasing production and to raising labor productivity. However we have not developed the product modernization mechanism. I fear that cost accounting and self-financing cannot guarantee our success in this area.

[Question] Why did you come to such a conclusion?

[Answer] First, self-financing does not yield an immediate return. We have the habit of launching a sensational campaign around any rescue operation, but if it does not produce a quick fix we either forget about it or else run it down and get carried away with the next one.

Second, it seems to me that there are many who are given good profit distribution coefficients and certain other benefits but who are capable of failing without even understanding what happened.



[Question] Why?

[Answer] Because they do not know how to take a risk. We do not particularly reward this quality. If you take a risk and it pays off, you may be praised. But if your risky experiment ends in failure or does not produce a result, you will more likely be punished or fired. Even though it is said: a beaten one is worth two unbeaten. And so one who has been "rewarded" with punishment will hardly want to take a risk again. Others also learn from his experience not to take risks. So we are losing a great deal because many have lost their risk gene.

[Question] Have you kept yours?

[Answer] Fortunately, I have. My statement may seem not entirely modest. We have worked at our own peril for many years. We have grown accustomed to this condition. Our engineers (especially, our designers) have long ago become accustomed to the fact that they do not have to coordinate anything with anyone. The general director of the association is the highest instance.

[Question] But didn't someone give you the authorization? Didn't you coordinate their production with someone?

[Answer] No one! Of course, we did experience a certain amount of resistance from some who later gave up on us as desperate. Finally, "at the top" there are also understanding people who see: success, recognition by the customer (and our customer is serious)—and we were left in peace.

[Question] So you are now reaping the fruits of your "genetic" inclination for risk? But others may get a taste for working under such a system.

[Answer] Let us hope that they do. I do not want to say that our collective has an exclusive monopoly on the inclination for risk. There are also others. I only want to emphasize: success in working under the new conditions will also be determined in large measure by this quality. It should not be suppressed but should be supported in every way.

[Question] Self-financing and cost accounting will evidently promote this?

[Answer] I am not certain. At any rate, the prerequisites for the reverse are being created. As you probably know, all the losses that are sustained by the enterprise in the form of various economic sanctions are reflected in the part of the profit that is left at its disposal. We must use these funds to pay for shortfalls in contract deliveries, for deviations from standards, for above-norm inventories, for the late activation of fixed capital, and many other things. Clearly, all search for the new leads to certain interruptions. Thus, risk is materially punishable. And

when our maneuver is limited to only 31.5 percent profit, it becomes understandable that it is much more advantageous and peaceful to risk nothing.

[Question] Tell me, Vladimir Pavlovich, did you not hope for more in January 1987 than the experiment actually gave you?

[Answer] A year ago we thought that we could "win" the way they did in Sumy. Then we would have danced the lezginka. In our case, everything was worse and more complex. It seems to me that the people in Sumy were successful because they were the first to begin the experiment and in such cases, most favored conditions are always created: they were left 71 percent of the profit whereas we, as I have already said, received only 31.5 percent. That is, not only 2 times less than the Sumy people but even 1.5 times less than before our conversion to the new conditions of operation. The old story was repeated: when the experiment is completed, studied, summarized, and broadly applied, by that stage the conditions change usually in a worse direction. But the references are usually to experience amassed in Sumy.

But in my opinion even this is not the most important question today. Now that the matter is acquiring broad scope and scale, many enterprise directors are speaking on this topic on the radio and television and are making all kinds of proposals on the basis of their personal experience. At one time, all this seemed extremely attractive to me. But then I thought: who are the judges? Who will evaluate all these local specifics? Who is the bright head that considers special conditions?

I came to the following conclusion: that it is necessary to establish a coefficient that is the same for everyone—nothing more. If we begin to consider the specifics of each one, then the "lame and the poor" will try to gain special rights for themselves. This will work to the detriment of those who break out of the harness. Such a thing is especially dangerous now, at a time when every director carries his requests, reinforced by his own work collective, party organs, etc., "upstairs."

The matter, by the way, is also complicated by the fact that we in many preceding years have loved to cite "beautiful" figures. The raykom demands: produce in excess of the plan! The obkom also: produce in excess of the plan! Our beloved ministry: produce in excess of the plan! But take note (this is symptomatic) that I NEVER heard anyone demand that I modernize my products. There is one demand everywhere and the schema is everywhere the same. Let us assume that there are five enterprises in a rayon. Two fulfill the plan. Two are constant and hopeless failures. One is a leader and always overfulfills its plan. If they fulfill their plan through their common efforts by 100 percent (it need not even be 105 percent), the raykom secretary is pleased. If the plan is fulfilled by 99.9 percent, he will be told: you

have failed. Even though his influence on the work of enterprises is very, very conditional. But who, besides me, understands my boiling pot?

So now everyone has magnificently mastered the enviable art of establishing indicators. Little demand is made on those who continuously fail to fulfill the plan. But it would not be bad to ask additional percent of those who overfulfill the plan if only to make up for the laggards.

The position of the obkom, the chief of the main administration, and the minister is analogous to that of the raykom. And everyone demands that we pay additional amounts to make up for the shortfalls of others. And since our association has always had good indicators, has always had an excess over the preceding year, the raykom, the obkom, and the beloved ministry have altogether always tried by hook or by crook to squeeze something additional out of us. And they will give to others who are 'poor' and 'unfortunate.'

I know of plants that have failed to meet their targets for many years. What do the local authorities do? They complain to Moscow: help my enterprise. What kind of help do they envisage? A lower plan, more resources. We have a very strong love for the "lame and the poor." And if we again put ourselves in their position, those who are in the lead will again find themselves under adverse conditions. Their funds will be used to render aid.

[Question] But in addition to cost accounting, the Law on the State Enterprise (Association) is now taking effect. It guarantees you major rights. You can now present your bill even to your ministry if it has made an incorrect decision concerning you that results in your enterprise sustaining losses.

[Answer] Present the bill to whom? To my ministry? The law has been adopted, only the administrative ecstasy has not passed. Even if something illegal is brought against us, I cannot prove anything to anyone. Do you want an example? Here is one. One more novelty—the state order—has now been adopted. It is an intelligent thing. We should welcome it but we fight it and write to all instances.

[Question] Why are you against it?

[Answer] The state order is the most important state target for any enterprise. Let the general director die together with his entire collective but the state order must be fulfilled without fail. This form has long existed in the GDR. I went there and studied it. Rudi Winter, my old friend and colleague and a general director of a machine tool building combine, explained to me: "The state order occupies only 15-20 percent of our total production volume. But it must be fulfilled without fail. The plant itself finds customers for the rest of its output and concludes contracts with them that are the basis for determining the rest of its product mix."

As we see, they are given quite a great deal of freedom; they work on a long leash.

I studied the German experience and decided that to receive a state order for only 15-20 percent would be unrealistic for us but that 50 percent would be pleasing to everyone. I submitted my proposal to the ministry and then went higher. They thought that 50 percent freedom for us was too rich and cut it to 15 percent. This is the only part of our output that we can determine for ourselves; the other 85 percent is the state order. I think that it is too bad the way we got lopped off but it is good all the same: at least there is a precedent. Based on the 15 percent we can gradually win new territories.

However even this variant, which was cut to the extreme, came as a total surprise.

[Question] Why?

[Answer] That is what I myself would like to know. About 3 months we received additional data on the state order for 1988. As if this was not enough, it was almost seven million rubles higher than the control figures for commodity output and it contained an additional 35 items in the product mix, 21 of which were not included in the previous plan.

[Question] Excuse me, I do not quite understand. The control figures are the enterprise's plan for 1988. The corresponding centralized allocations for them have already been made long ago. It is an integral part of the plan of the entire national economy. How could another, totally unsecured seven million be hung on you?

[Answer] Ask something easier. But this is not all. It is our business to turn out machine tools. This would seem to be patently obvious. And they stuffed everything they wanted into this additional state order. The collection of scrap and waste ferrous and nonferrous metals, the production of consumer goods, and special technological equipment for ourselves and for the branch, lumber...

[Question] What is the reason for this?

[Answer] We ship our machine tools in wooden crates. We ourselves make the boards from round timber. We need this lumber only for internal consumption and only in proportion to the number of machine tools we produce, no more no less. Therefore we ourselves know without Moscow how much lumber and what types of lumber must be sawed. No, the capital also sets this figure for us and even includes it in the state order...

[Question] In my view, it would be difficult to think up anything more stupid.

[Answer] But they will. For example, why do they indicate to us the volume of technological equipment for our own needs? We make as much as we need. It would be disadvantageous for us to produce more. It would also

be disadvantageous to make less—it would put a brake on our basic production. We ourselves can determine this better than anyone else. Nevertheless, some bureaucrat wrote this item in.

Naturally I asked the minister: "What are you doing? Why are you undermining the authority of the state order?" He replied: "That was Gosplan's order." I wrote to the first deputy chairman of Gosplan but have received no answer as yet.

[Question] Excuse me, Vladimir Pavlovich, but I don't quite understand this point. You keep saying: we will fight. But under self-financing, the ruble and economic levers that would determine the logic of the economic activity of an enterprise must be the principal "fighter" for justice.

[Answer] If that were only the case! In the fall of 1987 the oblast KRU [oversight and auditing administration] decided to write a half million rubles off our account.

[Question] For what reason?

[Answer] For our good work, naturally. You have probably heard that our plant uses electronics from abroad: it is more reliable than ours. But even it has the right to go out of commission. Customer ministries made the following request to us: take upon yourself the trouble to purchase backup reserves of electronics abroad, store them, and if a unit or board malfunctions, send one to us.

In general, I sent customers spare parts at my expense and they subsequently returned this money to me. During the entire time, this amounted to half a million; they wanted to write this off as state revenues. I went to the [female] chief of the Ivanovo KRU and explained: you know very well the nature of our enterprise and our product. If we do not send the necessary electronic unit to replace a defective unit, the machine will stand idle and the state will sustain heavy losses.

But she replied:

"You cannot do that. There are supply organizations for this purpose. You obtained the half million illegally."

I wrote to the Ministry of Finance. The response: "You cannot do that." I appealed to the finance minister himself. He replied: "In view of the importance of the matter, this money can be returned to the plant on an exceptional basis."

It might appear that justice had triumphed, but I know that our enterprise's renown played a certain part as did my fame to some degree. But if this had been a letter from the director of an average plant it would not have reached the minister or even the chief of a main administration. But this is still not everything. When I buy electronics wholesale for all my clients, I spend 20

percent less foreign currency than they would if they had purchased the same quantity retail. There is a direct benefit to the state but I am accused of violating the instructions. But after all, these instructions are out of date.

Now, according to the Law on the State Enterprise (Association), we have important rights for resolving our own problems. Work collective councils are to be created for this purpose. However all these innovations will make a game of democracy if questions that would seem to be in our competence continue to be resolved "at the top." After all, the work collective councils were created not to keep satrap directors in check but rather to resolve specific problems at their enterprise. But they keep coming to us with their orders: you yourself cannot understand this. As before, as I have already said, everything is strictly regulated.

[Question] Why does this happen?

[Answer] Everyone wants to manage. No one wants to relinquish authority and the privilege of resolving for us that which we can do for ourselves without anyone's help. A bureaucrat loves to "function." Our independence deprives him of his customary activity and calls into question the need for and sense of his position.

The bureaucratic passion knows no boundaries, but we will break through. Our product supports us and gives us strength. But what about plants in Krasnorechensk or Ivanovka? You should concern yourself with their directors. After all, if they do not break through, it will be bad for us because they will take from us in the name of helping them. I have come to understand that extravagant philanthropy was not abolished with the transition to cost accounting.

[Question] Are "Krasnorechensk" and "Ivanovka" imaginary examples?

[Answer] Of course. Even though such plants do indeed exist in our ministry. I know of the plant in the Ukrainian settlement Ivanovka because of the occasional mixup in our mail. Letters addressed to the director of that plant reach me in Ivanovo. While I have never visited our "namesake," judging by the letters I have accidentally read, it is not a first-rank enterprise and it is having a difficult time breaking through!

[Question] Incidentally, is your personnel turnover rate high?

[Answer] Turnover among designers is almost zero; among engineering and technical personnel—1.6 percent; and for the plant as a whole—4.4 percent.

[Question] Your production demands, if one can put it this way, a high degree of creative support...



[Answer] Without question. We have a staff of 600 designers and 300 electronic engineers. Considering the quantity and quality of training of the latter, this is approximately half of what the entire branch has.

[Question] It is probably for this reason that they can easily calculate the future of your association and the development of machine tool building in general many years in advance?

[Answer] Yes, we owe a great deal to them. But I remember that when we started our school for electronic engineers, there were many who doubted its feasibility: the overhead costs were high and no return was expected for 10-20 years. But we kept on increasing the size of our electronic personnel even though these specialists are not easy to find. But I now firmly know that if we did not have such a strong "electronics" team, we would have nothing. You cannot even imagine how quickly they understand all the most complex systems. Thanks to them, we have no problems in this area.

We are now starting a school for mathematicians. It will also be costly. But we are consciously taking these costs on our shoulders because we know that they are the future of our enterprise. In 5 years or so, possibly even sooner, they will produce ideas and calculations that will feed our production. And those who are presently economizing on the mathematical reserve will shout at us: you have buried everything under you. You are sitting like a dog in the manger. That's all right. We will survive this too.

[Question] When I was talking to you about our meeting, Vladimir Pavlovich, I thought that a year of the experiment would give you considerably more than it did..

[Answer] We all expected more. But frankly speaking, this is our old misfortune. As I have already said, we always place too many hopes in the latest innovation and if our hopes are not immediately vindicated, we quickly write it off, begin putting it down and launch the next campaign. We are always looking for a magic wand. We should do things differently the way the military do when they play out their operations in sandboxes. They try it one way first and another way the next. They choose one direction and then another. It also makes sense to try out different variants of an offensive in a sandbox because in a combat situation, when everything is burning and exploding, it will be too late to learn.

[Question] But you, after all, were not thrown into a combat situation all at once. You were given a certain time to prepare. And you have worked an entire year as if in an experiment. "This may not entirely be a sandbox, but it is not a battle either..."

[Answer] I agree with you to a certain degree. But I do not like the tendency to relate to the present reform as a final variant. There are too many knots in our economy and they cannot be untangled and untied all at once. If only everything were that simple!

I complain that they have left little profit to us that could be used for sociocultural services and housing construction. But would our lot be easier if they left us more? We presently have approximately 1.3 million rubles for this purpose. I do not like to have money lying idle. I tell the builders: "Take a million and build this or that." But they send us somewhere else: they don't need our rubles. Of course, we can use a certain part of the money—to build a Young Pioneer camp, to pay for vouchers (to a sanatorium)—but very much is left. Will we live better if we have 5 million or 10 million?

[Question] I think not.

[Answer] I am of the same opinion. The self-financing problem and the problem of earning money are related to a no less complex problem—how to spend it and how to turn it into goods. I personally encounter this problem at home every month. I can't complain. I am well paid. I bring home a wad of money big enough to choke a horse, but my wife says: "What shall I do with your money? It would be better if you brought home sausages or caviar." The same thing happens with the enterprises. Many similar seditious questions arise.

[Question] But after all, others make arrangements somehow.

[Answer] And I have been invited to "make arrangements" more than once. Build a club, they say, by the direct labor method. I am categorically opposed to this. There are no bricks. There is no flooring. There are no panels. Everything must be obtained "on the side" through various machinations. There are also no builders. So it is also necessary to "negotiate" with them, to stimulate them by semilegal means...

For me personally there is only one acceptable way: we make machines and receive money for them and for our money they do everything we need. I am not concerned with anything else. It is possible to "play the hooligan" once or twice, to build something on the edge of folly (in principle, every director has such a sin on his conscience), but to make semilegality a constant activity will, excuse me, end badly.

[Question] In other words, everything must be logical and consistent.

[Answer] And must come from life rather than slogans and good intentions. All the more so because we have the positive experience of such an approach to matters.



Do you remember how we held meetings for a long time regarding the production of goods for export? There was a lot of noise: targets, plans, words about prestigiousness, the honor of the factory label and so forth and so on. But matters did not as a rule go beyond words and plans because exports were not profitable. But our association went into the international market and only into the developed capitalist countries because it believed that sales under the conditions of fierce competition best characterize the quality and technical level of our products. Even though the material incentives were simply laughable. And only since May 1987 was a new procedure instituted that made exports (especially for freely convertible currency) exceptionally advantageous to the enterprise. This is an excellent example of true stimulation. Now no appeals are required.

[Question] I am happy that we ended our talk on an optimistic note.

[Answer] By the way, I do not want my critical comments to be construed pessimistically. It is simply that we have conceived a large-scale plan and we would very much like to see it succeed. Self-financing, to which all enterprises have already been converted since the New Year must not remain a static system once and for all

time. It must develop and the corresponding areas of our economic mechanism must be modernized. New content cannot be clothed in old form...

[Question] Are you referring to the old instructions?

[Answer] Yes, but not only to them.

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**NC, FMS Aggregates Produced by Leningrad Tool Plant**

18230024 Moscow *EKONOMICHESKAYA GAZETA* in Russian No 15, Apr 88 p 5

[Unsigned article: "Leningrad Tool Plant"]

[Text] The Leningrad Toolbuilding Association imeni Ya. M. Sverdlov manufactures a family of metalworking aggregates with numerical control and flexible manufacturing modules. They are intended for reequipping the machine tool park of the country.

In 1988, transferring to the new economic conditions, the association's collective strictly intends to fulfill the annual plan for all indicators. The technology is being improved in order to achieve this. The product assortment takes into account the specific requirements of the consumers.

## RAIL SYSTEMS

### Railroad Security Workers Conference

18290090a Moscow GUDOK in Russian 23 Feb 88 p 2

[Article by V. Chibisov: "Guardians of National Property: Notes From A Network Conference of Railroad Security Workers"]

[Text] If during the night a watchman squanders property that has been entrusted to his protection and his leader receives a bonus for it, it is not difficult to imagine the consequences of this action. The reader retorts: "Well, you will perhaps encounter something similar under the popular headline 'Did You Not Invent It as a Joke?' He will be correct. The depicted situation seems too incredible — incredible to us and to you. But there exist those, to whom we entrust our material valuables for safekeeping, and they are not to be seen.

Last year, losses from the misappropriation of freight on the Northern, Kemerovo, Krasnoyarsk, and Far Eastern railroads increased substantially through the fault of railroad security workers. This fact is even more than alarming: It means that there are serious derelictions in organizing the work of Armed Security Administration subunits, and it is natural to hold the directors responsible for this. Instead, however, Comrade Shigirev, the chief of the Far Eastern Railroad's Security Department, receives a bonus for work results during the year of exactly the right amount — 1,258 rubles; and Comrade Kostevskiy, the chief of the Khabarovsk Armed Security Administration detachment — correspondingly 256 rubles. The Kemerovo workers are not lagging behind their Far Eastern colleagues: Comrade Romanov, a department director, signed his name in the department to a receipt for an annual award totaling 1,225 rubles.

And now, reader, we ask whether they would want to exert efforts to put subordinate subunits into the required order after such an appreciable work incentive? Yes, burn everything with a dark blue flame and there will be no loss for me personally. And it is burning — more accurately, freight, rolling stock, structures ... are burning from neglect. Losses from last year's fires on the network are calculated in the millions of rubles. R. Derks, chief of the Moldavian Railroad's armed security department, admits: "We forgot about fire prevention inspections and the patrol service." The director's revelation was appraised last year by a more than 100-fold increase in losses from fire on the Moldavian Railroad!

The figures are striking: Tens of thousands of cases of misappropriation and caused losses of millions of rubles. The problem of safeguarding freight during transport has never been as acute as now. Even the positive changes for the better, which have been noticed in the work of the Arms Security Administration during the second year of the five-year plan, provide little consolation against this

background: In general, the amount of misappropriation has been reduced by 23 percent on the network, and the balance financial losses from them have been reduced by 36 percent.

N. Belan, chief of the Ministry of Railways Armed Security Administration, pointed out in his report: "Frequently, general appeals, discussions on restructuring, and promises to change one's attitude toward the fulfillment of official duties conceal sluggishness."

The increase in the misappropriation of freight, which is directly under the protection of riflemen on the South Ural, Southeastern, Odessa, Transcaucasian, Central Asian, and a number of other railroads, causes special alarm. One of the reasons here is the low discipline among personnel, the weakening of political and indoctrinational work, and the violations of the rules for performing guard duty. The security workers themselves often become accomplices to the crimes. The workers on such railroads as the Kuybyshev, Southeastern, Moscow, East Siberian, Volga, ... have particularly "distinguished" themselves.

Instances of the removal of parts from automotive and tractor equipment along the way are not becoming fewer, and — I would venture to surmise — will hardly decrease if one follows in the footsteps of the phrase that rang out during the conference: "It is noted that automobile spare tires most of all are missing from automobile trunks. The criminals break them open." As a way to stop this, it was suggested that spare parts be carried inside the motor vehicle cabs — as if the glass of the cabs is more reliable than the trunk locks.

When listening to the speeches of the Armed Security Administration department and detachment directors, you catch yourself thinking that they are more troubled in the local areas about indications of discovered crimes and compensation for losses (although this is also important) than about insuring the reliable security for the freight. From here come the attempts to relate losses to other railroads, complaints about the shortage of personnel, etc., etc.

Entirely little was said about preventing misappropriations. You see, it was for this reason that material valuables totaling 530,800 rubles fell into the pockets of swindlers on the Central Asian Mainline and 319,000 rubles worth on the Moscow Railroad. Almost 250,000 rubles each "floated away" on the West Kazakhstan and Alma-Ata Railroads.

We have deliberately paid more attention to shortcomings. The purpose of this conference was to investigate them and to point out ways to eliminate them and to increase the work efficiency of security subunits under conditions where rail transport has shifted to self-financing and self-support (samookupayemost). Many

armed security detachments have accumulated quite a bit of experience in providing security for freight, preventing misappropriations and providing fire safety.

The presentation by V. Davydyuk, chief of the rifle and fire team at the station of Shepetovka, was greeted with interest. This subunit has already been using the brigade contract type of work organization for many years, a council is operating, and they have developed a rifleman's code of honor. The team uses collective responsibility for safeguarding freight. As a result, there is strong discipline and a vigilant performance of duty. Not a single case of misappropriation has occurred here for 15 years.

High efficiency distinguishes the preventive work of the armed detachment at the Sverdlovsk Classification Yard. In the Leningrad Rail hub, the specialized joint groups of railroad security workers and internal affairs administration workers in transport have well proven themselves in preventing and discovering misappropriations. The Kuybyshev and Gorkiy railroads have organized the through escorting of automotive and tractor equipment and they have reduced theft and the removal of parts from motor vehicles and tractors....

In a word, experience exists and it has always existed. The Armed Security Administration of the Ministry of Railways has repeatedly conducted network seminars and schools to study it. However, it unfortunately has not been widely disseminated. That is why it is very important that the recommendations and methods for the practical work of progressive subunits, which have been developed during this conference, do not remain on paper but be disseminated to all armed security collectives. The experiences of individual collectives must without fail become the norm for the work of all subunits.

The security workers have an acute need for modern technical radio and telephone communications equipment, computer equipment.... Transport scientists, inventors and innovators can provide a great deal of help to them. Their activity in these matters is still not great. It is a pity.

An individual guarding national property. This image has entered our consciousness as the embodiment of incorruptibility and the sanctity of the property or freight entrusted to his protection. So it should be.

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**Modern Security Equipment Outlined**  
182900906 Moscow ZHELEZNODOROZHNY  
TRANSPORT in Russian No 1, Jan 88 pp 32-34

[Article by Yu. A. Nikanorov, department chief in the Ministry of Railways Armed Security Administration, and V. P. Kucheruk, an engineer: "Modern Security Equipment"]

[Text] The uninterrupted increase in the volume of freight shipments on rail transport is moving to the forefront the problems associated with their delivery to the consumer in a completely intact condition. Today, the development of new technical equipment is acquiring special importance in the area of freight security.

Unfortunately, the security and fire alarm systems and other devices for monitoring and observing installations being protected, which our domestic industry is producing for national economic enterprises, cannot be used everywhere to protect rail transport installations because of their technical characteristics since the specific nature of railroad work was not taken into consideration during their development.

At present, the Ministry of Railways and other interested departments are working on developing the most modern security equipment that will satisfy modern requirements. In particular, an optical night vision system, a television system that operates under low illumination conditions, and a security television system are being developed. The introduction of the new equipment will require that armed security workers adopt radical measures to use new forms and methods for organizing the security of freight and installations and for staffing their subunits with technically literate and highly qualified specialists.

During the development of security equipment for rail transport, they are considering such factors as the dispersion of installations, which are subject to protection, along the line stations, the organization of technical maintenance, the operation of security and fire alarm equipment, the insufficient illumination at stations and its absence on road sections, the around-the-clock operation of the main transport enterprises, the difficulty in installing communication lines at large operating stations, the impact on the operation of catenary system line voltage equipment, meteorological conditions, vibrations, etc. Even more requirements are being imposed during the development of security equipment for protecting freight transported in rail cars, containers and on open rolling stock.

#### Optical Night Vision System

An analysis of the security of freight being transported has shown that a significant amount of misappropriation occurs during darkness when trains are stopped and also where freight is stored and processed. During this time, the security of rail transport installations requires additional artificial illumination sources — powerful lamps, floodlights and floodlight towers. The cost of the equipment and expenditures for construction, maintenance and electrical energy represent tens of millions of rubles. This equipment, however, does not provide sufficient illumination.

Infrared (IR) equipment, which has been sufficiently developed in different branches of the national economy, suggests a way out of the situation that has been created. Infrared systems are most suitable for rail transport because powerful infrared emission sources and sensing instruments for visual observation provide the greatest effect. Visibility is provided through the direct conversion of electrical energy into optical radiation in semiconductor light-emitting diodes and lasers. These instruments are light in weight and have a long service life and high efficiency. This provides the opportunity to operate from independent power sources.

The image of the installation in infrared light is projected by a lens on the photocathode of an electronic optical converter (EOP). The illumination intensity of individual parts of the screen depend on the intensity of the electron flow and — as a result — a visible image of the installation appears on the screen. The image is observed visually with the help of an eye-piece. All of this provides an opportunity to watch installations at great distances and under poor illumination conditions. The use of semiconductor infrared emitters and night vision instruments (PNV) has permitted the development of a night vision system whose use will increase the reliability in protecting installations and freight and the efficiency and safety of rail transport work during nighttime and under conditions of limited visibility.

Three versions of a night vision system: a stationary system, a transportable one and a portable one, are being developed at the present time.

The stationary night vision system is designed for observing remote installations and installations located in complete darkness. The observation range is no less than one kilometer and the illumination area is 10 square meters. The stationary night vision system consists of a telescope, an aiming device and an infrared illumination unit. The telescope is placed on the aiming device and consists of a telephoto mirror lens, a three-stage EOP and a simple eye-piece. The amplification factor of the EOP used is close to 100,000. The eyepiece permits an image with a diameter of 100 millimeters to be obtained from the EOP screen. A high voltage power unit and power sources are placed around the EOP inside the body of the telescope. A powerful semiconductor IR emitter is used to observe the installation in complete darkness and when there is an absence of illumination by the surrounding background. The illumination unit is placed above the body of the telescope and near the operator for convenience in focusing the IR emitter on the object being observed. The compound magnification of the telescope is equal to 12<sup>x</sup>.

The transportable night vision system is designed for use at mobile observation points. The observation range of an object in moonlight is no less than 700 meters and no less than 300 meters in complete darkness using IR illumination. Based on its optical train, the portable night vision system is a telescope which is attached to an

aiming device. A two-stage EOP with an amplification coefficient of 9,000 has been placed between the lens and the eye-piece. The size of the object's image obtained on the EOP screen is equal to 80 millimeters. The eye-piece is equipped with a headrest for ease of operation by the operator while moving. Inside the body of the telescope is a voltage transformer with a voltage amplifier for powering the EOP and a medium power operating current regulator. The IR emitter in the radiator of the illumination unit is located on the front panel below the lens. Considering the fact that illumination is required at small distances, focusing is done with one lens. The system's electrical circuit is fed from a 12-volt power supply source. The deterioration of results with distance — when compared to a stationary night vision system — is linked to the use of an EOP with a smaller amplification factor and an illumination source with a smaller power. The compound magnification of the telescope lies within the range of 6 to 12<sup>x</sup> depending on the type of lens used.

The portable night vision system is intended for individual use. It provides for observation in complete darkness with active IR illumination of objects at distances of up to 150 meters and up to 300 meters in moonlight. The system consists of two separate parts: An optical system and a power unit.

Originally, the optical system was built as a binocular system that consisted of two lenses of two single-stage EOP and two eye-pieces. The simplest photo lenses were used as the eye-pieces. An IR illumination unit was placed in the Vee between the two EOP above the lenses. This unit consisted of a semiconductor emitter and a focusing lens. The compound magnification was 2<sup>x</sup>. The weight of the binoculars was one kilogram.

The power unit includes a 9-12 volt current source, for which a storage battery from portable radio sets or two 3336-type 4.5 volt each flat batteries can be used, and a voltage converter with a voltage amplifier for powering the EOP and a current regulator for powering the semiconductor emitter. The required current in the passive observation mode is 30 milliamperes and in the active mode with illumination it ranges from 200 to 300 milliamperes depending on the type of emitter. The weight of the power unit with the current source is one kilogram. The binoculars are connected with the power unit by a shielded high voltage cable and an emitter power lead.

Test operations of the binocular system have shown that the opportunities for replacing the lenses to change magnification are restricted and are limited by the set interpupillary distance which is equal to 65 millimeters. That is why a monocular night vision system version was tested. In this instance, the IR illumination unit is placed above the body of the monocular system. This provides an opportunity to replace the IR radiation source without disassembling the monocular system itself. This



design has permitted lenses with a focal length of up to 300 millimeters to be used and the compound magnification to be changed from 2 to 12 $\times$ .

After observing an object through the binocular night vision system, however, the eyes adapted to the brightness of the screen and the illumination of the background within a range of from 4 to 10 seconds; the adaptation time was reduced during observations through the monocular night vision system because the closing of the other eye was not required. The observation range in the active mode in complete darkness is 150 meters and 300 meters in moonlight. The weight of the monocular system varies from 400 to 900 grams depending on the type of lens.

A comparison of the three types of night vision systems has shown that all of them are sufficiently effective. However, from the point of view of efficiency, mobility, power self-sufficiency, simplicity of construction, lightness, and low cost, preference was expressed for the portable monocular night vision system. This version has been accepted as the basic one and it is planned to produce it serially.

#### Use of Television Systems

Television is finding more and more applications in rail transport in solving various tasks to improve the organization of integrated and efficient direction over the progress of technical operations at freight, classification yards and passenger stations and in insuring the security of freight.

A television system that operates under reduced lighting conditions. Modified enclosed TV camera units of the PTU-54, PTU-55, PTU-56, PTU-57, and PTU-58 types — which differ only in the number of television cameras — have been most widely used. Vidicons, which possess little sensitivity at a low illumination level and in the near IR spectrum, are used as the camera tubes for these units. That is why additional illumination is required during the evening and night.

In connection with this, the All-Union Scientific Research Institute for Rail Transport is calculating the expenses to create this illumination for the PTU-56 unit in a freight station park. The cost of the equipment alone, which includes floodlight masts and searchlights — excluding operating costs and additional electrical energy — exceeds the cost of the enclosed television camera twofold. It is possible to find a way out of this situation by using television cameras with increased sensitivity — on the order of one lux — which can operate under a low level of illumination.

A television camera with increased sensitivity. Our domestic industry has now mastered the serial production of the KT-2 camera which has an enclosed nature and is designed for work in measurement systems, technical vision systems of industrial robots with increased

information characteristics, devices for inputting images into computers, etc. The low resolution of up to 200 lines, an operating illumination range of from 100 to 10,000 lux, and the presence of a large number of digital elements reduce its dependability and lead to frequent breakdowns. The design of the KT-2 and its operating characteristics do not permit it to be used directly in rail transport. At the same time, all of the capabilities, which have been piled into a photosensitive circuit with a charged link (PSZS), are not being used. In this connection, a model of a television camera, in which three new large integrated circuits: synchronizing generator, current switches, an instrument with a charging link (PSZ) and a type-transparency matrix, are used instead of digital elements, has been developed.

The spectrum range of operation of the FSES lies from 0.4 to 1.05 micrometers. The sensitivity of the FSES grows as the wavelength increases and becomes maximal close to 0.85 micrometers. The radiation wavelength of one micrometer corresponds to the radiation of a standard incandescent lamp. The infrared component in the radiation spectrum of an incandescent lamp was the determinant factor in measuring the sensitivity of the camera to diffused light. The camera's sensitivity value at a distance of 10 meters is less than one lux of illumination at the object. Tests of the model were conducted in complete darkness with IR illumination of the object. These demonstrated the possibility of using this method for observations at distances of up to 50 meters. It is necessary to point out that when the illumination radiation wavelength is increased, the resolution falls: during daylight, it is 300 lines, 250 lines — at a wave length of 0.85 micrometers, and only 150 lines close to one micrometer. This is connected to the sharp decrease in the absorption factor when the radiation wavelength is increased and to the diffused spread of the carrier in the adjacent photosensitive cells. The required power of the camera with a 12-volt power source is equal to 0.9 watts.

Considering the fact that the camera must basically operate under low illumination levels and in the near IR spectrum, the lens should approximate the characteristics of lenses for night vision instruments in its characteristics, i.e., possess small optical losses and good transmission with spatial frequencies which lie below the threshold resolution of the FSES.

Experiments conducted with the camera and different lenses have shown its advantages when compared with the KT-2. Based on its operating characteristics, it can be effectively used not only in the work to insure the safeguarding of freight and installations but also in other Ministry of Railways services.

Cameras, which have been built on a new semiconductor element base, are beginning to occupy a special place among television cameras.

An optical IR channel for transmitting information. The difficulties, which are connected with the acquisition and laying of power cables, control cables and coaxial cables, and their relatively large cost are making the use of semiconductor emitters for establishing optical information transmission lines a long-term one.

Two independent channels for transmitting information to long distances are required in order to insure the operation of the television system. One channel is for transmitting low frequency aiming information, and the other is for the transmission of high frequency information with a band transmission on the order of 10 megahertz. The low frequency aiming channel includes a semiconductor emitter with a lens located on the aiming device, a power unit, an aiming command encoder and a control panel. The reception part includes a photodetector with a lens located on the aiming device, a low frequency amplifier, a decoder, and an actuator. The television camera, mechanisms for aiming it in two planes, the mechanisms for changing the f-stop and focusing the lens, and the IR illumination unit can be switched on by commands from the control panel.

The high frequency channel for transmitting the video signal from the television camera includes a video amplifier, a semiconductor emitter with a lens mounted on an aiming device, and a power unit. Photo detector devices with a lens and an aiming device, a video amplifier, a power unit, and a video control device are located at the observation point. For special cases, provisions have been made for transmitting the video signal over fibre-optic lines or through the television camera's powerful video amplifier over coaxial cable. The low power consumption of the high frequency transmitting unit permits the television camera to be used in a self-sufficient manner with power from storage batteries.

A television security system. Television systems are being used abroad and in our country as technical equipment for protecting installations since they provide for the use of visual methods, dependability in the receipt of information and rapidity in its transmission. Along with this, it is necessary to use television equipment in combination with other mechanization and automation systems in order to obtain an economic and psychological effect. I have in mind setting up an alarm line on the perimeter of the installation's territory or at its entrance — an alarm line whose disruption causes an alarm signal to be given after which the nature of the disruption is determined and a correct decision is made based on a video controlled device (VKU). The need for establishing television security has also originated in order to get rid of additional security alarm devices (where this is possible).

A television security system must provide for monitoring of passage at installations and in freight station parks and for the safeguarding of material valuables at the places where they are processed and to do this without additional detectors and security and fire alarm systems.

In other words, when violations or any changes (smoke, flames, etc.) appear in the monitored zone, and this means in the field of view of the television camera's lens, the system gives an alarm in the security premises and its image is seen on the VKU screen.

During the development of this system, the television system with an optical IR communications channel, which was described above, was used as the basis. Interframe subtraction of the video signal is used to detect moving objects. The FSES permits the subtraction operation of the stationary portion of the image to be done in a charged manner.

The security television system operates if the television camera's image is aimed at the zone being protected and at the upper open portion of the FSES matrix. During the first field, a charge is accumulated in the accumulation section with a subsequent transfer of this charge through the universal register to the buffer memory section which is similar to the accumulation section but which is closed to light. During the second field, a charge is accumulated in the accumulation section and goes to the comparison circuit with a subsequent output of video signals from the buffer section. The different video signal arrives at the video amplifier or directly at the VKU input. If no changes have occurred in the field of view of the lens during this time, the variation signal is equal to zero and there is no image on the VKU screen. When there are changes in the field of view of the lens, the variation signal becomes different from zero, the system for turning on the alarm goes into operation and an image of the trespasser appears on the VKU screen.

Distortions of the video signal are possible during the playback of the charge from the matrix to the comparison circuit. This occurs because the illumination of the matrix continues during the removal of the charge from the accumulation section to the comparison circuit. In order to eliminate this phenomenon, it is necessary to use a mechanical shutter which will open the matrix during the line duration and close it during the field duration. During the operation of the system under limited visibility conditions and during nighttime when IR illumination is necessary, it is possible not to use the shutter; however, when doing this it is necessary to shift the IR illumination emitter operating conditions to impulse synchronized ones using plain and frame scanning. If several cameras cover the zone being monitored, the alarm signal, which arrives from each one of them, will determine the trespasser's location.

The transmission of the video signal from the television camera and the aiming of the camera will be done using an optical IR communications channel. This channel, being a wireless one, is very convenient in its organization (laying) and is economically advantageous — extremely scarce RPSH control cable and RK-75 coaxial

cable are not required in it. Thus, the reliability of the security of an installation equipped with television security is increased and expenditures on maintaining security are sharply reduced.

The security equipment set, which has been built using IR semiconductor emitters and instruments with a charging link and microprocessors and which has been combined in a central observation point, will permit the complicated tasks, which are involved in a limited security contingent providing protection to national economic freight being transported, to be solved; labor productivity to be increased; safe working conditions to be established; the technological and production discipline of the workers employed in protecting freight and installations to be improved; and considerable material, labor and energy resources to be saved.

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#### Engineer Discusses New Series VL86F Locomotive

18290086a Moscow GUDOK in Russian 24 Feb 88 p 2

[Article by V. Avilov, First Class Electric Locomotive Engineer, under "Tomorrow's Technology" rubric: "An Electric Locomotive As Seen by an Engineer"]

[Text] Batayak—Only by resolutely accelerating technical progress will we solve the major problems placed before those of us in the transportation sector by the Party as our part in the ongoing restructuring. In compliance with a CPSU Central Committee Politburo decision, a program for re-equipping and modernizing our railroads before the end of this century is now under way. What are the elements of this program? What equipment do we need to devise and put into series production in the period ahead? How should the production methods be changed in all the units of our transport facilities? The editorial board is calling on scientists, specialists and the industrial workers who supply the transport sector with new equipment to air their opinions and to make suggestions regarding these questions in the pages of this newspaper.

Today we present the first of these addresses under the new rubric, "Tomorrow's Technology".

All the electric locomotives manufactured by the Novocherkassk plant, which uses our depot as its test track, have passed, figuratively speaking, through my hands. And if you count those locomotives which have not been put on line, but which embody unique developmental stages both for the designers and for us, the testers, then the number is even greater.

The basic model is, of course, the VL80. These units bear the following index designations: R—for those units made of recovered materials, A—for those powered by

asynchronous traction motors, V—for those with thyatron motors synchronized with a three-phase rotor, and S—for those capable of working according to a multiple-unit system. This is a mass-produced locomotive. Later came the VL84, VL85, VL86 and so on.

We are presently testing the VL86F. This is an alternating-current electric locomotive powered by asynchronous traction motors with variable-speed traction control. It is a 12-axle double locomotive. The letter F indicates that it was designed in collaboration with Finnish experts. The electronic traction control system to be used on this domestically-produced machine is being checked out and may be put into series production later on. Thus the collaboration with foreign firms has already begun showing technical progress in the transport sector.

And our domestically-manufactured electric locomotive is still far from being perfect. By the way, there are a great many opinions on how this locomotive should be improved. The designers have their own opinions about this, the people at the locomotive plant have theirs and the client—the MPS (Ministry of Railways) may have a third. But it is the engineer who operates the locomotive. And he should not only have the final say, but in my opinion his views should be given preference when the final evaluation on whether or not to go ahead with production is made.

Exactly what kind of locomotive do we need? First of all, it must be powerful. Present-day traction motors have almost 1,000 kW of power and are also approaching the limits of adhesion. The load on the axle has reached its utmost limit as well. The fact that we've gone from an 8-axle to a 12-axle design tells us that the power of the motor has reached its uppermost limits, and that the designers have increased the number of axles to give the machine more power. But this approach doesn't help much. What's more, multiple traction, including that provided by non-cab sections, can be controlled by radio and placed in the center of a super-heavy train as well as at its end. However, we engineers also have to manage an electric locomotive's power wisely. I have a great many complaints against my own department in this regard. A train engineer needs not only this power, but some reserve power. This is so he can get the train moving without any particular problem, in case there's a failure of some sort.

And what about today? Each new series and every successive power increase is followed by an increase in the weight norms. And here, the weight norms are frequently allowed to reach critical levels. One out of every 6 or 8 or 12 motors breaks down forcing you to send for an auxiliary motor. The machine is loaded, as they say, to the stops.

We cannot continue this way. We must not forget that our reserve power allows us to quickly bring freight trains up to speeds like those at which passenger trains



travel. This factor is very important in dense traffic, since in this country freight trains use the same track as passenger trains.

In the second place, our locomotives need to be reliable. Here, there has been notable progress with traction motors. This is attested to by the transition to alternating current motors, either the thyatron motors or the asynchronous motors used on the VL86F, which are very reliable. But on the whole, an electric locomotive is a complex system, whose individual elements possess varying degrees of reliability.

I think we need to improve our locomotives' reliability by duplicating the most crucial systems, as is the practice in aviation and cosmonautics. For example, take the electric locomotive's brakes. We need to augment the pneumatic brakes with an electric braking system. And these systems should operate independently. Remember the terrible Kamenskiy trainwreck? The engineer tried to use the electric brake, but since the pneumatic brake had already been applied, the rheostat brake simply failed to operate. Who needs this kind of set-up? Whose life does it save, and how? And whom does it help, and how does it help them in a difficult situation or en route in general?

Developers frequently reproach train operators, saying that they treat the electric braking equipment like ballast. I don't call it technical progress when a new piece of equipment does nothing to help control the train, but complicates it or draws too much electric power. Let us remember the evolution of the current-recovery brake on direct current electric locomotives. Pure recovery occurred only when the entire system operated approximately as reliably as the traction system. And it was no more difficult for the engineer to control this brake than the traction motor or the pneumatic brakes.

This is precisely the path taken by developers on electric locomotive No 1 of the VL86F series. In order to engage the electric braking (and recovery!) system, all I have to do is turn the reverse handle. And just beyond that is the same controller and the same instrument which replaced the ammeters we were all accustomed to, which controlled the traction motors' current. Only now the dial shows the percentage of tractive force. And, respectively, during recovery it shows the percentage of braking force.

To get back to the reliability of the electric locomotive in terms of its being a system. What are we supposed to get excited about when a locomotive breaks down? The old steam locomotive engineers who in due course changed over to driving electric locomotives, had a very clear grasp of the situation. When they were asked what distinguished a steam locomotive from an electric locomotive, they said that breakdowns are immediately visible on a steam locomotive, it only takes a minute to find the malfunction and they can be repaired in a day. On an electric locomotive, you spend days looking for stray currents, but once you've found them it only takes a minute to set them right. I can't put it any plainer than

that. In fact, not only is the difference obvious, but it's obvious what sort of locomotive the engineer needs. He needs a locomotive whose malfunctions can be found and repaired quickly.

At present, the domestic locomotive-building industry is being extremely sluggish about making progress in this matter. The main circuit breaker "pops" in the middle of a run on an open track, and you have to guess what has broken and where it is. The VL86F uses electronics to provide full information via blocks, signal lights light emitting diodes. This is excellent. If only all these superfluous items on our series-produced locomotives hadn't turned out to be superfluous and silly, such as, for example the air conditioner for the engineer's cab. Unfortunately, those who try to economize on new equipment by sorting out the well-conceived and tested from that which they consider "unessential" are not the people who drive the locomotives. And they don't ask for our opinions.

It's a shame that designers and ergonomics experts haven't examined our engineer's cabs. The cab's instruments are arranged like this: here's the cab—climb in, boys, and stick things anywhere you want, put your radio sets, lights, accident-hazard window latches, heaters, traction brake controllers and speedometers anywhere you find a place...And so all these things you don't need when you have a trainwreck are stuck all over the place. A good jerk of the train and you have to have something on your head, even if it's a tank-driver's helmet.

And take the engineer's seat. Scientists have been wrestling with this problem for more than one decade, and still haven't solved it. So the last word in equipment is the VL86F No 001. And here I sit under way, holding on with both hands to keep from falling off. And it turns and twists and distracts my attention. And anything that is a distraction is an irritation. How could the designers not have foreseen this?

12659

#### Ministry Appointments and Transfers

18290086b Moscow GUDOK in Russian 24 Feb 88 p 2

[Unattributed article under the "Official Department" rubric: "Appointments and Transfers"]

[Text:] Nikolay Stepanovich Nikitin—chief of the Main Economic Administration—has been approved as a member of the MPS board.

N. S. Nikitin was born in 1933, is a Russian, has been a CPSU member since 1961, is a railway engineer and a builder. He began working in railroad transport in 1956 upon completion of his studies at the Tashkent Railroad Engineers' Institute. Held the posts of district inspector, chief engineer, track-laying machine station chief, chief of the Berchogurskiy Ballast Plant, bridge foreman, deputy chief and chief of a permanent way division, line



service chief and chief engineer and first deputy chief of the Alma-Ata Railroad. N. S. Nikitin served as first deputy chief of the Main MPS Economic Planning Administration since 1987, then as chief of the MPS Main Economic Administration.

**Oleg Anatolyevich Moshenko** has been appointed chief of the Baltic Railroad, and is relieved of his duties as Chief of the Estonian Division and deputy chief of the Baltic Railroad.

O. A. Moshenko was born in 1938, is a Russian, a CPSU member since 1965 and a railway engineer for railroad operations. Has been employed in railroad transport since graduation from the BellIZhT [Belorussian Railroad Transport Engineers' Institute] in 1960. He served as an engineer for a track service planning and surveying group, a chief station engineer, chief of a traffic service technical department, chief of the Daugavpils Division and deputy chief of the Baltic Railroad. Since 1983, O. A. Moshenko has been chief of the Estonian Division and deputy chief of the Baltic Railroad.

**Elbrus Farman ogly Abdullayev** has been appointed chief of the Azerbaijan Railroad and is relieved of his duties as train service chief and deputy chief of the Lvov Railroad.

E. F. Abdullayev was born in 1948, is an Azerbaijani, has been a CPSU member since 1976 and has served as a railway engineer for railroad operations. He has been employed in railroad transport since 1971, when he graduated from the DIIT [Dnepropetrovsk Railroad Transport Engineers' Institute]. He began working as a station tracks inspector. He then held the post of deputy chief, chief engineer and station chief. He has worked as a train dispatcher, deputy traffic department chief, freight department chief, deputy chief and chief of a railway division. From 1984 to 1986 E. F. Abdullayev was a student of the USSR Academy of the National Economy. Since 1986 he has been an operating department chief and deputy chief of the Lvov Railroad.

**Ivan Aratemovich Yemets** has been relieved of his duties as chief of the Baltic Railroad in connection with his retirement.

**Anatoly Petrovich Platonov** has been relieved of his duties as chief of the Azerbaijan Railroad in connection with his retirement.

Official thanks to comrades Yemets and Platonov for their many years of productive work in the transport sector.

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## MARITIME AND RIVER FLEETS

### Minister Volmer On Fleet

18290083a Moscow VODNYI TRANSPORT in Russian 4 Feb 88 pp 1-2

[Excerpt from article by USSR Minister of the Maritime Fleet Yu. Volmer, "The Trade Fleet of the Land of the Soviets"]

[Excerpt] By the end of the 1950's maritime transport had reached a limit beyond which there followed the stage which was characterized by explosive growth. During the years of the 5th Five-Year Plan period, there was quite a noticeable quantitative increase in the fleet. The total deadweight amounted to 3.2 million tons. The transitional stage in the development of maritime transport began during the years of the 7th Five-Year Plan period.

The results show that this period of growth in maritime transport was characterized by such features as a steadily growing fleet, the result of which was that, compared to 1960, available vessels had increased 5-fold by the end of 1985. The trans-shipping capacities of our ports increased as well.

Along with the quantitative increase in the expansion of maritime transport's material and technical base from 1960 through 1985, there also occurred cardinal qualitative changes. New vessels were developed which were better adapted to transport national economic and foreign trade cargoes. These vessels were distinguished by such features as wide hold hatches and high-output ship cranes. As export and import shipments of bulk cargoes began increasing, the domestic fleet began to be supplemented intensively by domestically- and foreign-built bulk carriers of various deadweights.

Particularly great changes were made in the structure of the tanker fleet. If this fleet consisted of ships with a cargo-carrying capacity of up to 10,000 t prior to 1960, then during the second half of the 1960's roughly 90 percent of it consisted of series-produced tankers having cargo-carrying capacities of from 15,000 to 45,000 t. The year 1963 saw the putting into operation of a prototype of a new major series of Sofiya-class tankers having a dead weight of 51,000 t.

The gains made in re-equipping the maritime transport fleet during the 7th and 8th five-year plan periods set the stage for further progress, i.e., specialization of the types of cargoes to be shipped.

The 9th Five-Year Plan period witnessed a reduction in the supply of general-purpose ships.

During the 10th Five-Year Plan period, the Soviet maritime fleet was supplemented by large-tonnage oil tankers capable of hauling bulk and liquid cargoes of over 100,000 t, as well as Crimea-class tankers having a dead

weight of 150,000 t. The first lighter-barges and special-purpose vessels for carrying heavyweight cargoes appeared at the end of that five-year plan period. By and large, the transport fleet of the 1970's, in addition to increased cargo-carrying capacity and speed and the building of more special-purpose ships, was noted for the practice of installing internal combustion engines, which consume less fuel, on new ships.

Plans called for the fleet's basic nucleus to change over to running on viscous grades of fuels, the introduction of equipment designed to protect the marine environment, the transition from partial to full automation of independent ship groups and complexes, and the comprehensive mechanization of power plants and navigation processes. Construction of special-purpose and icebreaker-transport ships continued with the expansion of the Norilsk class of icebreakers.

The augmentation of the fleet with new transport equipment necessitated the construction of ports and deep-water wharves and the use of more up-to-date mechanized loading equipment.

The equipping of the maritime fleet with specialized vessels and loading complexes prepared the way for a radical change in the transport process, i.e., a changeover to the mass use of highly-efficient TTS's [transport and production systems]. The 1960's and 1970's witnessed the formation and development of packaging, container, rolker [rolkernaya], ferry and lighter-barge TTS's. These progressive TTS's transported 9.4 percent of all freight in 1970, 26.3 percent in 1980 and 37 percent in 1987.

The gradual growth of maritime transport has been characterized by the utilization of extensive and intensive factors.

In accordance with the decisions of the 27th CPSU Congress, maritime transport has been charged with meeting the national economy's transport needs promptly, completely and with a high level of quality.

One feature which distinguishes the 12th Five-Year Plan period from previous plan periods, as it relates to maritime transport, lies in the fact that the above task will be performed with a reduction in fleet strength—the primary element of the active portion of its productive capital—at the end of the five-year plan period. Here, the main way to meet plan targets is to step up production by all possible means.

Along with improving the manner in which operative fixed productive capital is used, there are plans to implement the fundamental directions for intensifying the operation of maritime transport during the 12th Five-Year Plan period by introducing scientific and technical advances, optimizing the control system by improving the economic mechanism and by continuing to develop automated control systems.

Plans call for the use of fixed productive capital to be improved by optimizing the disposition of the fleet according to its lines and their routes, reducing the total km logged carrying ballast, intensifying the fleet's cargo-handling operations in ports, reducing the amount of time ships spend being repaired, improving control of the container park, improving the comprehensive servicing of the fleet, the fleet's interaction with related sectors and through active collaboration with CEMA member-nations.

The scientific and technical development of production, which was stipulated in the plan (and which is a prime factor in intensification) will come about by supplementing the fleet with advanced types of ships, constructing highly efficient portside loading complexes in ports, developing cargo-shipping procedures which will ensure high-quality deliveries of goods to customers with the least inputs of labor, time and other resources. Here, the ships responsible for the greatest expansion of progressive operating procedures (container ships, "roll-on-roll-off" ships, ferries, timber-carrying vessels and lighter-barges) comprise some 39 percent.

The proportion of high-efficiency vessels in the overall dry-cargo fleet used to transport general cargoes, which cargoes are the most labor intensive, will expand by the end of the 12th Five-Year Plan period.

In order to eliminate the disproportion between the freight-handling capacity of the ports and shipping requirements, plans call for the construction of special-purpose freight-handling complexes, including those for handling freight on "roll-on-roll-off" ships, container ships, ferries and lighter-barges. The share of these specialized complexes in the overall amount of capacities being put into operation between 1986 and 1990 amounts to 52 percent against 35 percent in 1985.

Considering the plans to augment the fleet and construct freight-handling complexes in the ports, we also intend to further increase dry-cargo shipments handled by TTS's. The overall share of these shipments should increase from 33 percent in 1985 to 43.1 percent in 1990. The basic increase will come from increasing the amount of cargo shipped in containers, packets and on ferries.

The primary steps being taken jointly with CEMA member-nations to intensify the growth of maritime transport during the 12th Five-Year Plan period include putting USSR-GDR ferry crossings between the ports of Klayed and Mukran into operation, further expansion of operating progressive TTS's (container, packet and rolker), the introduction of a lighter-vessel systems between ports in the USSR and the Socialist Republic of Vietnam, the development and introduction of automated control systems for freight transport, the reintroduction of advanced types of ships for delivering shipments of foodstuffs, primarily refrigerator ships on the USSR-Republic of Cuba, USSR-Socialist Republic of Vietnam and USSR-NRB [People's Republic of Bulgaria] lines.

The problem lies in using the efforts of the concerned parties to utilize transport complexes effectively, using the progressive manufacturing methods which have been put into operation and which ensure substantial increases in output with minimal outlays of resources.

At present, a complex of measures is being implemented which will restructure the work of this sector. The primary measure consists in changing our shipping companies and enterprises over to full [khozaschet] economic accountability and self-financing. We have been working under the new economic mechanism for a year. An examination of the results shows that this process needs further deepening and improvement in a number of areas. But its positive influence is already making itself felt.

On the verge of the 70th anniversary of the signing of the Edict which nationalized the Merchant Shipping Fleet, maritime transport, in its role as a component of the country's unified transport network, has met the basic targets of the plan for 1987 and for two years of the five-year plan. The national economy's transport needs have been met.

The Soviet Merchant Shipping Fleet is participating in international shipping, thereby giving our country foreign trade independence from foreign ship owners. The results thus achieved are the manifestation of the tremendous efforts of our veterans, sailors, port workers, ship repair workers and the entire collective making up the sector.

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#### Fire Damages Terminal

18290083b Moscow SOTSIALISTICHESKAYA  
INDUSTRIYA in Russian 25 Dec 87 p 3

[TASS article: "Fire in River Terminal"]

[Text] Gorkiy—The left wing of Volga United River Shipping Company's river terminal was enveloped in flames last night. The crew of the icebreaker Zarubin, which was moored close to the site of the accident, reported the fire to the central fire communications station at 3:37 am.

Militia Sergeant S. Yevseichev, who was on duty in the terminal building, tried unsuccessfully to put out the blaze with a fire extinguisher. Meanwhile, fire trucks rushed to the bank of the Volga from all quarters of the city. There were people in the terminal's hotel. In addition, this facility has for a number of days been the site of a pre-New Year industrial goods fair.

Clearly, the fire department personnel and the members of the militia who arrived at the scene acted courageously. A ladder was used to quickly evacuate all 68 of the people who were staying in the hotel as well as three hotel employees. The fire was extinguished at 4:54 am.

Fortunately, there were no casualties. However, the shipping company, which deals with municipal organizations here sustained considerable material damage.

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#### New Maritime Organization

18290083c Moscow VODNYI TRANSPORT in Russian  
6 Feb 88 p 2

[Article by P. Starov: "Association Organized"]

[Text] By order of the Ministry of the Maritime Fleet, January of this year marks the creation of the Far-East State Maritime Transport Production Association (DV GPO), which is centered around MMF [Ministry of the Maritime Fleet] shipping companies, enterprises and organizations located in areas of the Far East and the Eastern Arctic Sector.

It is made up of the Far East, Sakhalin, Kamchatka and Primorskoye shipping companies, the Yakutsk Production Association, the Far East Scientific Research, Production and Planning and Surveying Institute of the Maritime Fleet and the Vladivostok and Sakhalin Seafaring schools.

The new association will have expanded opportunities to develop the region socially through maximal concentration of the production and scientific-technical potential of the Far East Basin's shipping companies and enterprises.

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#### New Ship 'Akademik Raspletin'

18290083d Moscow VODNYI TRANSPORT in  
Russian 5 Jan 88 p 1

[Article by S. Pesterev, Far East Shipping Company: "Ship Completion in Sevastopol"]

[Text] The diesel-powered ship Akademik Raspletin, a new Vitaliy Dyakonov-series river and ocean-class vessel moved away from the Oka Shipbuilding Plant dock in Navashino and steamed for Sevastopol for finishing work.

The ship is slated to become part of the Far East Shipping Company fleet and is designed to transport timber, international-standard containers and bulk cargoes. The holds are equipped with double freeboards in order to eliminate transverse "pockets" and speed up transloading operations.

As to its architectural design, the ship is a shallow-draft single-deck motor vessel with two screws and four holds, a diesel-reduction gear power plant with double freeboards and stern-placed machine room and crew's quarters.



Loading operations on the Akademik Raspletin will be handled by four electro-hydraulic cranes with lifting capacities of 8 tons.

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**New Tanker 'Akademik Vekua'**

18290083e Tbilisi ZARYA VOSTOKA in Russian 9 Dec 87 p 4

[Unattributed article: "Akademik Vekua in Home Port"]

[Text] The Georgian Shipping Company's new tanker Akademik Vekua arrived into its port of registration. Heavy rains failed to darken the solemn ceremonial greeting, which was attended not only by citizens of Batumi, but a great many visitors to the city.

A meeting was held aboard the motor ship. Those addressing the meeting included Revaz Beridze, secretary of the Georgian Shipping Company party committee, Dzhumbar Lominadze, member of the Georgian Academy of Sciences, Tamara Vekua, wife of Ilya Vekua and others who came to wish the crew success in their work and good sailing.

The ship was built at Yugoslavia's Split Shipyard, and is the progenitor of the second generation of Iosip Broz Tito-class ships. The ship's new design incorporates up-to-date world-class design resolutions.

The tanker is 151 m long and 22.4 m wide, makes up to 15 knots and can transport over 16,000 t of cargoes for the national economy. Its tanks can hold four different types of cargoes simultaneously.

G. Kh. Emiridze, candidate member of the Georgian CP Central Committee Bureau and first secretary of the Adzhara obkom also attended the meeting with the tanker crew.

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